TOSHIBA

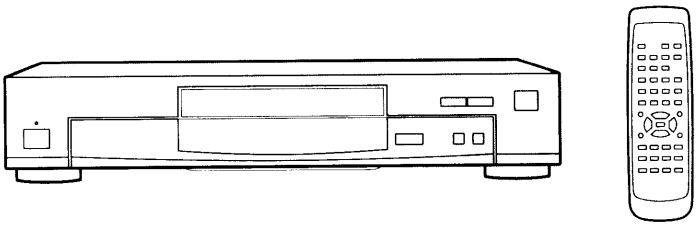
FILE NO. 810-9902

SERVICE MANUAL

DVD VIDEO COMPACT disc DIGITAL AUDIO SPATIALIZER® N-2-2™ DOLBY DIGITAL dts DIGITAL OUT

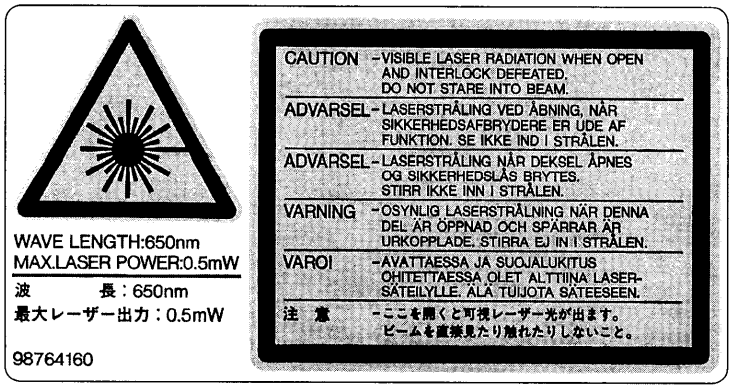
DVD VIDEO PLAYER

SD-2109



PRINTED IN JAPAN, Apr., 1999 Ⓢ

LASER BEAM CAUTION LABEL


WAVE LENGTH:650nm
MAX.LASER POWER:0.5mW
波　　長：650nm
最大レーザー出力：0.5mW
98764160
CAUTION -VISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. DO NOT STARE INTO BEAM.
ADVARSEL- LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. SE IKKE IND I STRÅLEN.
ADVARSEL- LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. STIRR IKKE INN I STRÅLEN.
VARNING -OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLADE. STIRRA EJ IN I STRÅLEN.
VARO! -AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASER-SÄTEILYLLE. ÄLÄ TUIJOTA SÄTEESEEN.
注　意 -ここを開くと可視レーザー光が出ます。ビームを直接見たり触れたりしないこと。

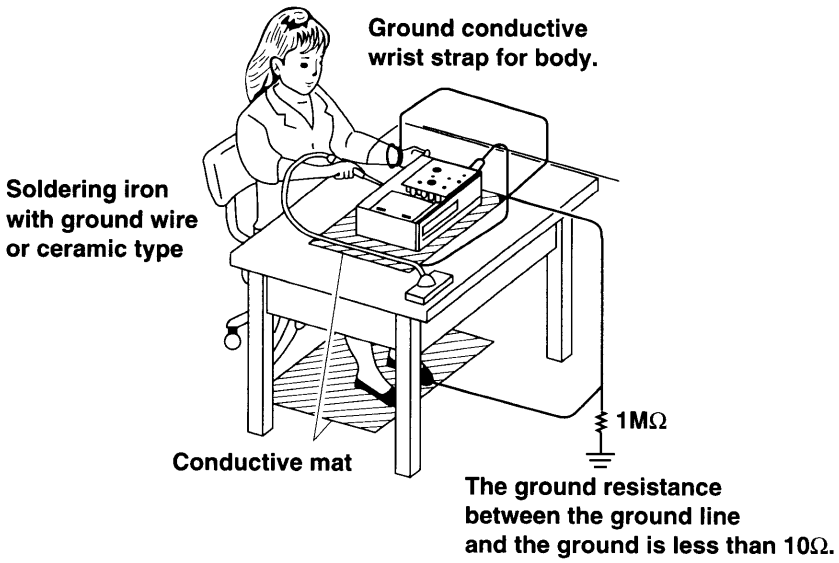
When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of a laser may be recceived.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electricity.

Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire, etc. to protect the laser diode from damage by static electricity.

And also, the LSI and IC are same as above.


Ground conductive wrist strap for body.
Soldering iron with ground wire or ceramic type
1MΩ
Conductive mat
The ground resistance between the ground line and the ground is less than 10Ω.

SAFETY NOTICE

SAFETY PRECAUTIONS

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use an AC voltmeter, having 5000 Ω per volt or more sensitivity.

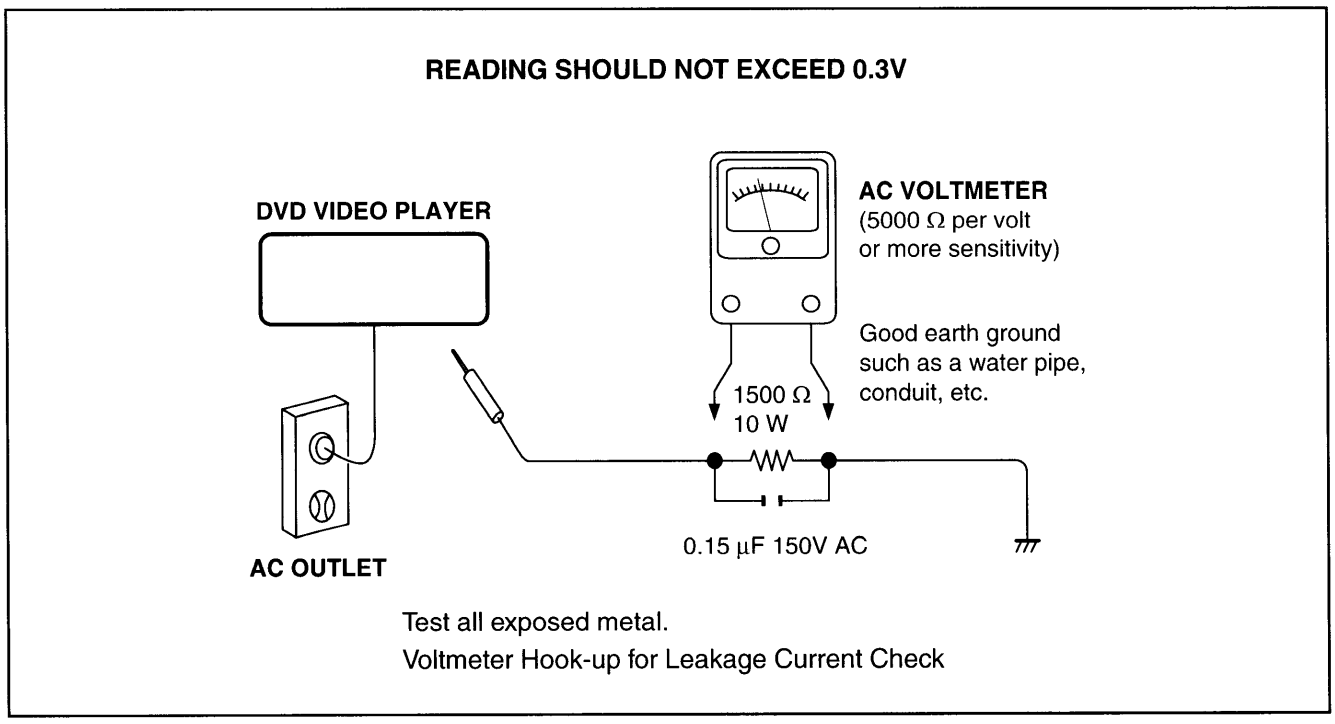
Connect a 1500 Ω 10 W resistor, paralleled by a 0.15 µF 150V AC capacitor between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of cabinet (antennas, handle bracket, metal cabinet screwheads, metal overlays, control shafts, etc.).

Measure the AC voltage across the 1500 Ω resistor.

The test must be conducted with the AC switch on and then repeated with the AC switch off. The AC voltage indicated by the meter may not exceed 0.3 V. A reading exceeding 0.3 V indicates that a dangerous potential exists, the fault must be located and corrected.

Repeat the above test with the DVD VIDEO PLAYER power plug reversed.

NEVER RETURN A DVD VIDEO PLAYER TO THE CUSTOMER WITHOUT TAKING NECESSARY CORRECTIVE ACTION.



Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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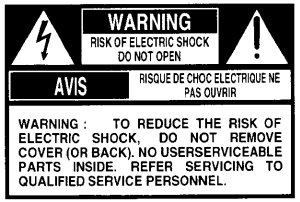
SAFETY PRECAUTIONS


WARNING
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS
RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR
WARNING : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USERSERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.**

CAUTION: **TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.**

ATTENTION: **POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.**

CAUTION: This Digital Video Disc Player employs a Laser System.
To ensure proper use of this product, please read this owner's manual carefully and retain for future reference. Should the unit require maintenance, contact an authorized service location - see service procedure.

Use of controls, adjustments or the performance of procedures other than those specified may result herein hazardous radiation exposure.

To prevent direct exposure to laser beam, do not try to open the enclosure.
Visible laser radiation when open and interlocks defeated.
DO NOT STARE INTO BEAM.

FCC NOTICE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rule. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING: Changes or modifications made to this equipment, not expressly approved by Toshiba, or parties authorized by Toshiba, could void the user's authority to operate the equipment.

In the spaces provided below, record the Model and Serial No. located on the rear panel of your DVD video player.

Model No. _____ Serial No. _____

Retain this information for future reference.

Location of the required label

PRODUCT IS CERTIFIED BY THE MANUFACTURER TO COMPLY WITH DHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT THE DATE OF MANUFACTURE.

MANUFACTURED

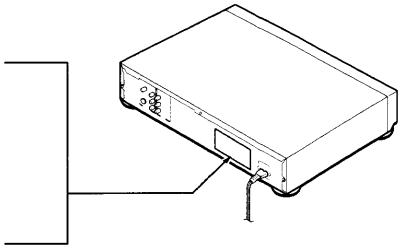
TOSHIBA AMERICA CONSUMER PRODUCTS, INC.
82 TOTOWA RD., WAYNE, NJ 07470, U.S.A

or

PRODUCT IS CERTIFIED BY THE MANUFACTURER TO COMPLY WITH DHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT THE DATE OF MANUFACTURE.

MANUFACTURED

TOSHIBA OF CANADA,LTD.
191 McNABB ST., MARKHAM, ONTARIO,
L3R 8H2, CANADA



SECTION 1
GENERAL DESCRIPTIONS

1. OPERATING INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS

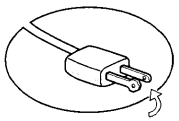
CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN THIS OWNER'S MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS BOOKLET FOR FUTURE REFERENCE.

This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.
DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

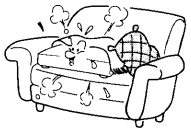
1. Read owner's manual
   After unpacking this product, read the owner's manual carefully, and follow all the operating and other instructions.

2. Power Sources
   This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

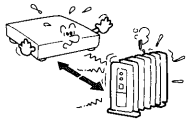
3. Grounding or Polarization
   This product may be equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.



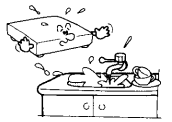
4. Ventilation
   Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.



5. Heat
   The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.



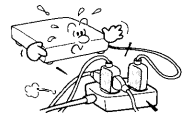
6. Water and Moisture
   Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool and the like.



7. Cleaning
   Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

8. Power-Cord Protection
   Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

9. Overloading
   Do not overload wall outlets; extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.



10. Lightning
    For added protection for this product during storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.

11. Object and Liquid Entry
    Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

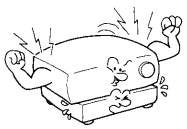
12. Attachments
    Do not use attachments not recommended by the product manufacturer as they may cause hazards.

IMPORTANT SAFETY INSTRUCTIONS

13. Accessories
Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

14. Disc Tray
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.

15. Burden
Do not place a heavy object on or step on the product. The object may fall, causing serious personal injury and serious damage to the product.



16. Headphones
When you use headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

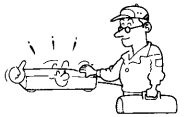
17. Disc
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

18. Damage Requiring Service
Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
a) When the power-supply cord or plug is damaged.
b) If liquid has been spilled, or objects have fallen into the product.
c) If the product has been exposed to rain or water.
d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
e) If the product has been dropped or damaged in any way.
f) When the product exhibits a distinct change in performance - this indicates a need for service.

19. Servicing
Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

20. Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

21. Safety Check
Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.



Precautions

Notes on handling

- When shipping the DVD video player, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD video player. Do not leave rubber or plastic products in contact with the DVD video player for a long time. They will leave marks on the finish.
- The top and rear panels of the DVD video player may become warm after a long period of use. This is not a malfunction.
- When the DVD video player is not in use, be sure to remove the disc and turn off the power.
- If you do not use the DVD video player for a long period, the unit may not function properly in the future. Turn on and use the DVD video player occasionally.

Notes on locating

- When you place this DVD video player near a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD video player away from the TV, radio, or VCR.

Notes on cleaning

Use a soft, dry cloth for cleaning.

- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
  Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD video player.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

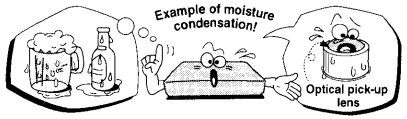
To obtain a clear picture

The DVD video player is a high technology, precision device. If the optical pick-up lens and disc drive parts are dirty or worn down, the picture quality becomes poor. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

Notes on moisture condensation

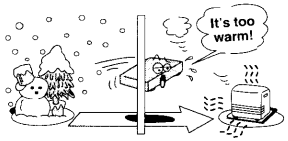
Moisture condensation damages the DVD video player. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD video player.



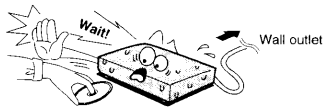
■ **Moisture condensation occurs during the following cases.**

- When you bring the DVD video player directly from a cold place to a warm place.
- When you use the DVD video player in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD video player in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD video player in a humid place.



■ **Do not use the DVD video player when moisture condensation may occur.**

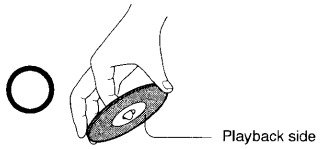
If you use the DVD video player in such a situation, it may damage discs and internal parts. Remove the disc, connect the power cord of the DVD video player to the wall outlet, turn on the DVD video player, and leave it for two or three hours. After two or three hours, the DVD video player will have warmed up and evaporated any moisture. Keep the DVD video player connected to the wall outlet and moisture condensation will seldom occur.



Notes on Discs

On handling discs

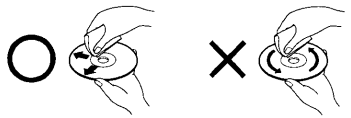
- Do not touch the playback side of the disc.



- Do not attach paper or tape to discs.

On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.



- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

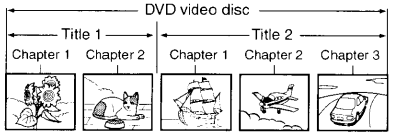
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

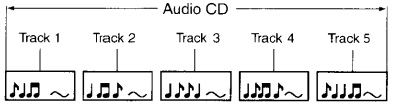
Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. Audio CDs are divided into tracks.

DVD video disc



Audio CD



Each title, chapter or track is assigned a number, which is called "title number", "chapter number" or "track number" respectively.
There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

DVD video discs are copy protected, and any recordings made from these discs will be distorted.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on Discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD video player. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD video player may not respond to all operating commands. This is not a defect in the DVD video player. Refer to instruction notes of discs.

"⊘" may appear on the TV screen during operation. A "⊘" means that the operation is not permitted by the DVD video player or the disc.

Notes on region numbers

The region number of this DVD video player is 1. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find 1 or ALL, disc playback will not be allowed by the player. (In this case, the DVD video player will display a message on-screen.)

Playable discs

This DVD video player can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO	Audio + video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
			8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
Audio CDs	COMPACT disc DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes

You cannot play discs other than those listed above.

This DVD video player uses the NTSC color system, and cannot play DVD video discs recorded in any other color system (PAL, SECAM, etc.).

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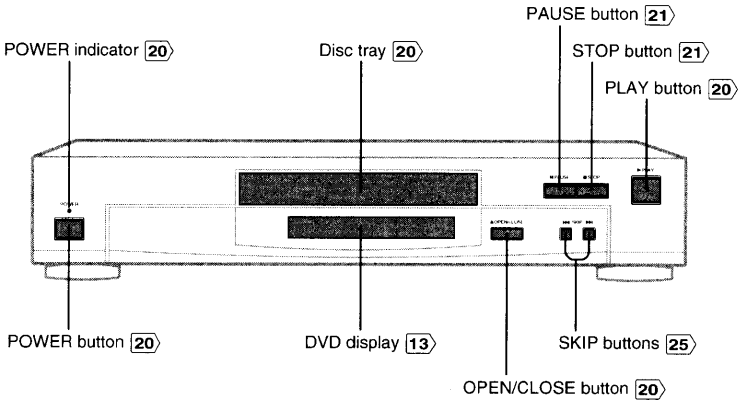
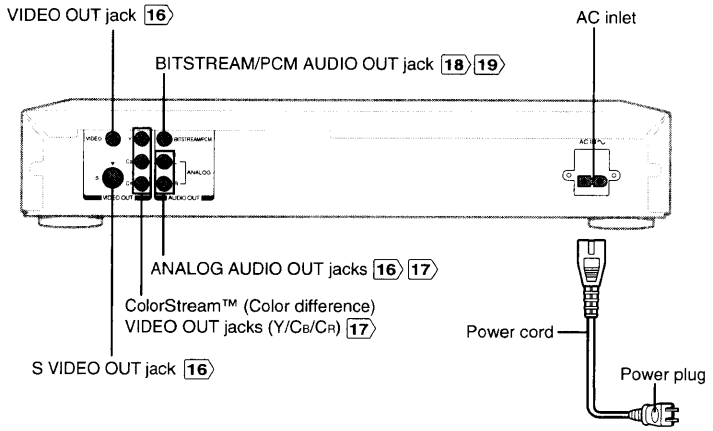
Identification of Controls

See the page in ☐ for details.

Front panel



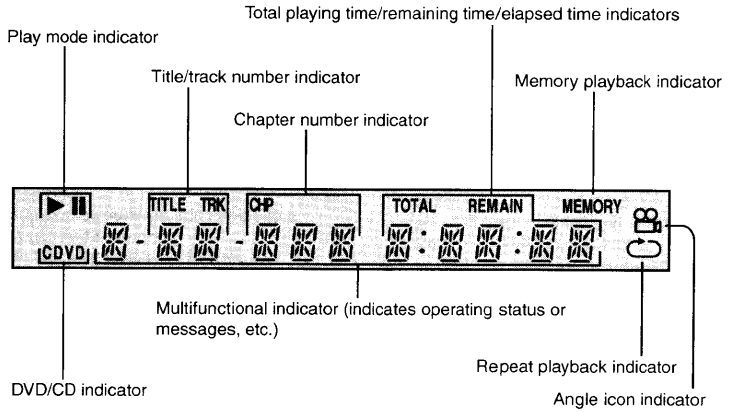
Rear panel



DVD display

■ **Pressing of the FL DIMMER button on the remote control changes the brightness of the Display.**

FL DIMMER ☐ Normal → Dimmed → Off

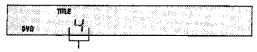


The indicators vary depending on the kinds of discs you play.

DVD video disc

- When closing the disc tray:

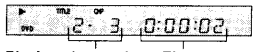
Example



Total number of titles

- During playback:

Example



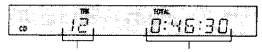
Playing chapter 3 of title 2 — **Elapsed time of the current title**

Some discs may not display chapter numbers or elapsed time.

Audio CD

- When closing the disc tray:

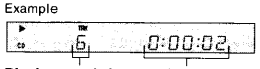
Example



Total number of tracks — **Total playing time of the disc**

- During playback:

Example

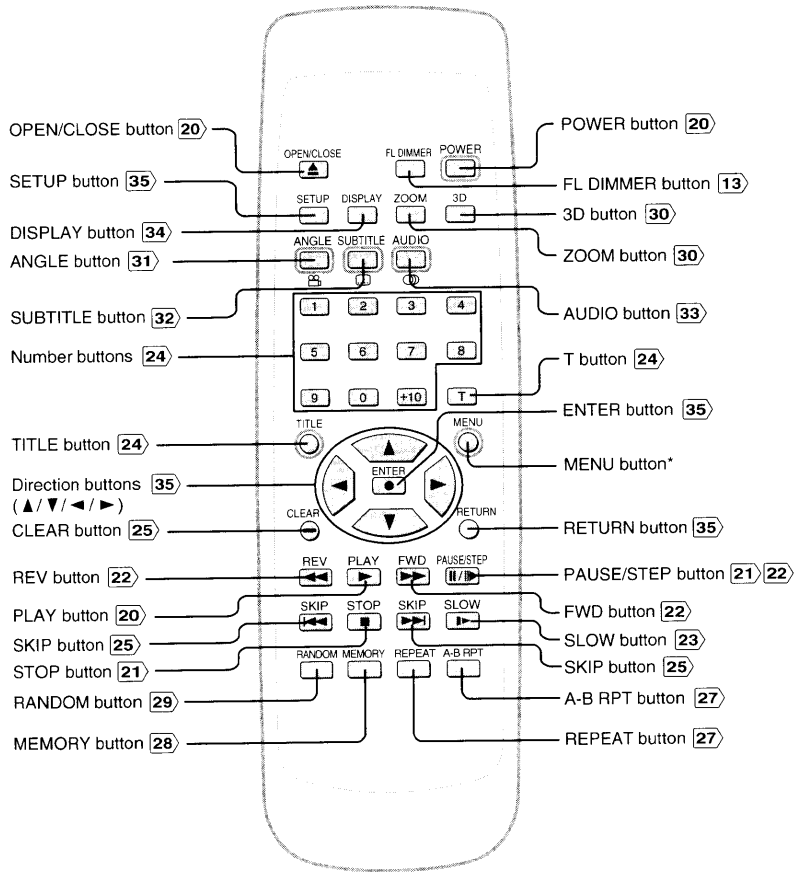


Playing track 6 — **Elapsed time of the current track**

Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in ⬚ for details.

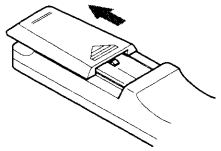
Remote control



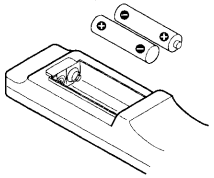
*** MENU button**
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in "Locating a title using the title menu." 24

Loading batteries

1 Open the cover.

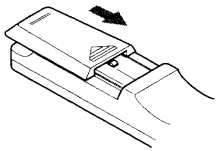


2 Insert batteries (AA size).



Make sure to match the + and – on the batteries to the marks inside the battery compartment.

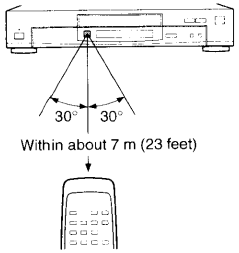
3 Close the cover.



Notes on batteries
Improper use of batteries may cause battery leakage and corrosion. To operate the remote control correctly, follow the instructions below.
- Do not insert batteries into the remote control in the wrong direction.
- Do not charge, heat, open, or short-circuit the batteries. Do not throw batteries into a fire.
- Do not leave dead or exhausted batteries in the remote control.
- Do not use different types of batteries together, or mix old and new batteries.
- If you do not use the remote control for a long period of time, remove the batteries to avoid possible damage from battery corrosion.
- If the remote control does not function correctly or if the operating range becomes reduced, replace all batteries with new ones.
- If battery leakage occurs, wipe the battery liquid from the battery compartment, then insert new batteries.

Operating with the remote control

Point the remote control at the remote sensor and press the buttons.



Distance: About 7 m (23 feet) from the front of the remote sensor
Angle: About 30° in each direction of the front of the remote sensor

* Do not expose the remote sensor of the DVD video player to a strong light source such as direct sunlight or other illumination. If you do so, you may not be able to operate the DVD video player via the remote control.

Notes on the remote control
- Direct the remote control at the remote sensor of the DVD video player.
- Do not drop or give the remote control a shock.
- Do not leave the remote control near an extremely hot or humid place.
- Do not spill water or put anything wet on the remote control.
- Do not open the remote control.

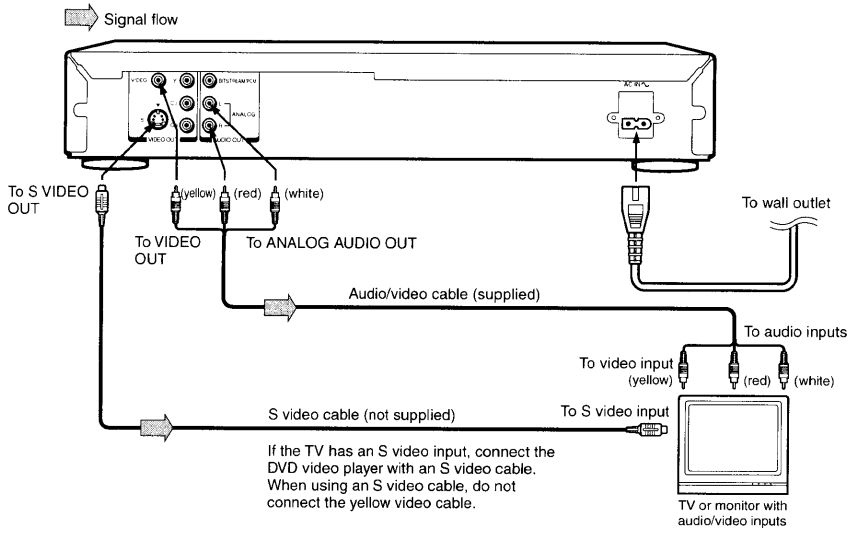
1-7

Connecting to a TV

Connect the DVD video player to your TV.

For details of output sound, see 33.

Connecting to a TV


Signal flow
To S VIDEO OUT
(yellow)
(red)
(white)
To VIDEO OUT
To ANALOG AUDIO OUT
To wall outlet
Audio/video cable (supplied)
To audio inputs
To video input (yellow)
(red)
(white)
S video cable (not supplied)
To S video input
If the TV has an S video input, connect the DVD video player with an S video cable. When using an S video cable, do not connect the yellow video cable.
TV or monitor with audio/video inputs

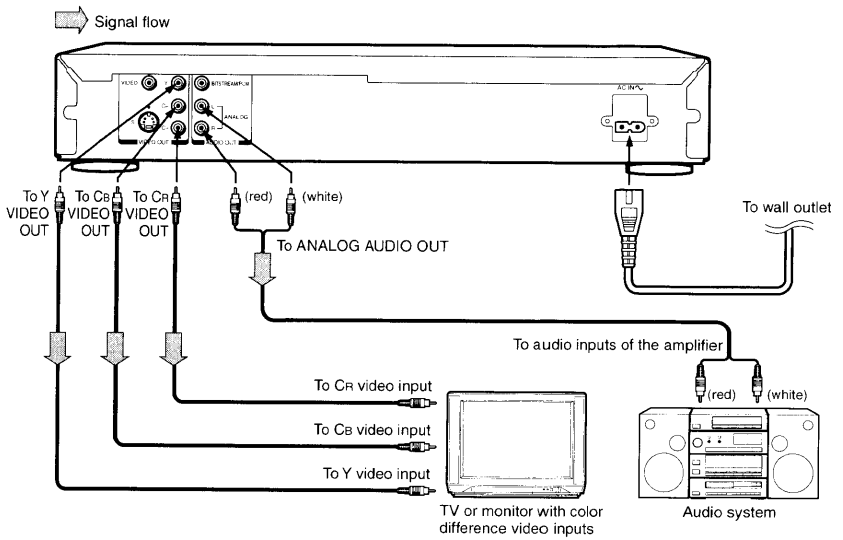
- Make the following setting.

Setting	Select:	Page
"Audio Out Select"	"Analog 2ch"	35 39

Notes

- Refer to the owner's manual of the connected TV as well.
- When you connect the DVD video player to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.
- If your television set has one audio input, connect the DVD video player to a Y cable adapter (not supplied) and then connect to your TV.
- Connect the DVD video player directly to your TV. If you connect the DVD video player to a VCR, TV/VCR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

Connecting to an audio system and TV equipped with ColorStream™ (color difference) inputs



ColorStream™ (color difference) outputs/inputs

Some TVs or monitors are equipped with color difference inputs. Connecting to these inputs allows you to enjoy higher quality picture playback.
Actual labels for color difference inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or "Component video")
In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

- Make the following setting.

Setting	Select:	Page
"Audio Out Select"	"Analog 2ch"	35 39

Notes

- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD video player near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD video player away from the tuner and radio.
- The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD video player's power cord. If you leave the amplifier power on, the speakers may be damaged.

Connecting to Optional Equipment

You can enjoy high quality dynamic sounds by connecting the DVD video player to optional audio equipment.

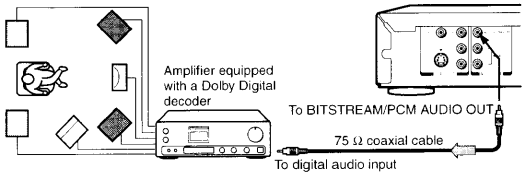
For connection to your TV, see "Connecting to a TV" 16 17.
For details of output sound, see 33.

▒ : Front speaker
□ : Rear speaker
□ : Sub woofer
▯ : Center speaker
⇨ : Signal flow

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD video player to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories. Confidential Unpublished Works. ©1992-1997 Dolby Laboratories, Inc. All rights reserved.



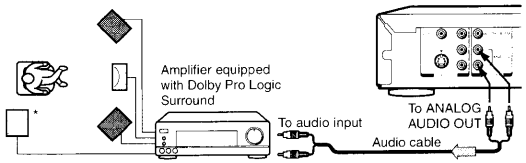
- Use DVD video discs encoded via the Dolby Digital recording system.
- Make the following setting.

Setting	Select:	Page
"Audio Out Select"	"Bitstream"	35 39
Recording system	DD	33

Connecting to an amplifier equipped with Dolby Pro Logic Surround

Dolby Pro Logic Surround
You can enjoy the dynamic realistic sound of Dolby Pro Logic Surround by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in "Connecting to an amplifier equipped with a Dolby Digital decoder." Refer to that amplifier's owner's manual and set the amplifier so you can enjoy Dolby Pro Logic Surround sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.



- Make the following setting.

Setting	Select:	Page
"Audio Out Select"	"Analog 2ch"	35 39

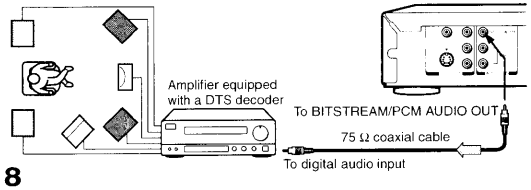
Be sure to set "Audio Out Select" to "Analog 2ch" when you enjoy sounds of Dolby Pro Logic Surround using this connection.

* Connect one or two rear speakers.
The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

"DTS" and "DTS Digital Surround" are trademarks of Digital Theater Systems, Inc.



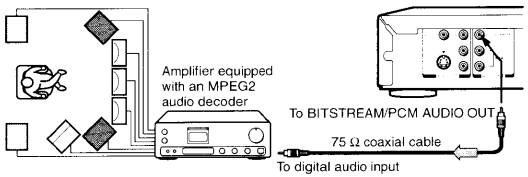
- Use DVD video discs or audio CDs encoded via the DTS recording system.
- Make the following setting.

Setting	Select:	Page
"Audio Out Select"	"Bitstream"	35 39
Recording system	DTS	33

Warning
- Do not set "Audio Out Select" to "Bitstream" from the on-screen displays 35 39 unless you are connecting (via the BITSTREAM/PCM AUDIO OUT jack) an AV decoder that has the Dolby Digital, Digital Theater Systems (DTS) or MPEG2 decoding function. High volume sound may damage your hearing as well as the speakers.
- When playing DTS-encoded discs (DVD video discs and audio CDs), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the ANALOG AUDIO OUT jacks of the DVD video player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.

Connecting to an amplifier equipped with an MPEG2 audio decoder

MPEG2 sound
You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

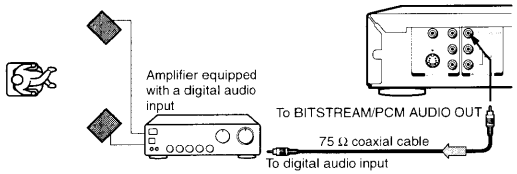


- Use DVD video discs encoded via the MPEG2 recording system.
- Make the following setting.

Setting	Select:	Page
"Audio Out Select"	"Bitstream"	35 39
Recording system	MPEG	33

Connecting to an amplifier equipped with a digital audio input

2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).



- Make the following setting.

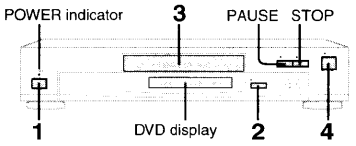
Setting	Select:	Page
"Audio Out Select"	"PCM"	35 39

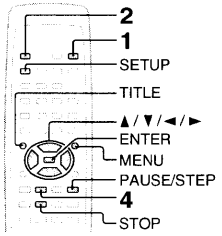
Notes
- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the "COAXIAL" input of a Receiver or Processor.
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD video player's power cord. If you leave the amplifier power on, the speakers may be damaged.

Playing a Disc

This section shows you the basics on how to play a disc.

CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.





■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD video player, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About DVD CD

The DVD CD icons on the heading bar show the playable discs for the function described under that heading.
DVD : You can use this function with DVD video discs.
CD : You can use this function with audio CDs.

DVD CD Basic playback

Preparations
- When you want to view a disc, turn on the TV and select the video input connected to the DVD video player.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD video player.

1 Press POWER.

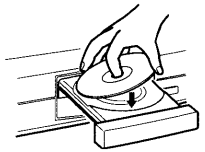
POWER — The DVD video player turns on and the POWER indicator on the player illuminates.

When the DVD video player is turned on for the first time, an initial set-up display appears. See "Initial set-up" to make the settings before proceeding to step 2.

2 Press OPEN/CLOSE.

OPEN/CLOSE — The disc tray opens.

3 Place the disc on the disc tray.



With the playback side down

- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD video player to malfunction.
- Do not place anything except DVD video discs or audio CDs on the disc tray.

4 Press PLAY.

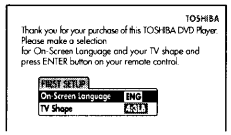
PLAY — The disc tray closes and playback starts.

If you insert a DVD video disc that contains a title menu, a menu may appear. See "Locating a title using the title nemu." 24
- You may need to press the TITLE or MENU button to display disc menu (depending on the actual DVD video disc.)

■ Initial set-up

Make the following settings on the display.

On-screen Language: Select the appropriate on-screen language.
TV Shape: Select a picture size according to the aspect ratio of your TV. (See 38 for details.)


TOSHIBA
Thank you for your purchase of this TOSHIBA DVD Player.
Please make a selection
for On-Screen Language and your TV shape and
press ENTER button on your remote control.
FIRST SETUP
On Screen Language ENG
TV Shape 4:3 LB

1 Press ▲/▼ to select "On-Screen Language," and press **ENTER**.
2 Select a language using ▲/▼, and press **ENTER**.
3 Press ▼ to select "TV Shape," and press **ENTER**.
4 Select a picture size using ▲/▼, and press **ENTER**.
5 Finally press **SETUP**.

All your selections are entered and the display disappears.
To change your settings, see "Customizing the Function Settings." 35

■ To pause playback (still mode)

Press **PAUSE/STEP** during playback.

PAUSE/STEP — To resume normal playback, press the PLAY button.

- The sound is muted during still mode.

■ To stop playback

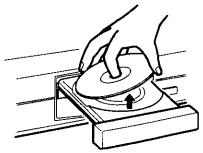
Press **STOP**.

STOP

■ To remove the disc

Press **OPEN/CLOSE**.

OPEN/CLOSE — Remove the disc after the disc tray opens completely.



Be sure to press the OPEN/CLOSE button to close the disc tray after you remove the disc.

■ About the screen saver

If you pause a picture of a DVD video disc and leave it still for a long while, the screen saver of the DVD video player automatically appears (when "Screen Saver" is set to "On" 40). To turn off the screen saver, press the PLAY button.

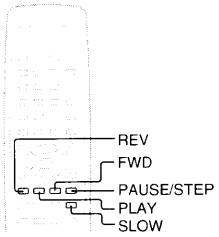
■ Automatic Power Off function

If the DVD video player is stopped, or the screen saver is engaged for about 20 minutes, the DVD video player will automatically turn itself off.

Notes
- Do not move the DVD video player during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD video player to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD video player to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the STOP button on your remote control once the movie is completed.

Playing a Disc (continued)

You can play discs at various speeds, and resume playback from the location where you stopped playback.



Playing fast in reverse or forward

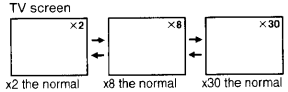
Press REV or FWD during playback.

REV ◄◄ FWD ►►

REV: Fast reverse playback
FWD: Fast forward playback

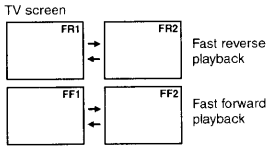
DVD Each time you press the REV or FWD button, the playback speed changes.

TV screen



CD Each time you press the REV or FWD button, the two speeds alternate.

TV screen



■ To resume normal playback

Press **PLAY**.

PLAY ►

Notes

- The DVD video player does not play sound and subtitles during reverse and forward scan of DVD video discs. However, the DVD video player plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

Playing frame by frame

Press PAUSE/STEP during still playback.

PAUSE/STEP II / I►

Each time you press the PAUSE/STEP button, the picture advances one frame.

■ To resume normal playback

Press **PLAY**.

PLAY ►

Note

The sound is muted during frame by frame playback.

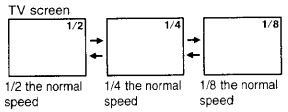
Playing in slow-motion

Press SLOW during playback.

SLOW I►

Each time you press the SLOW button, the slow-motion speed changes.

TV screen



■ To resume normal playback

Press **PLAY**.

PLAY ►

Note

The sound is muted during slow-motion playback.

Resuming playback from the same location

1 Press STOP at the location where you want to interrupt playback.

STOP ■

The DVD video player memorizes the location where playback is stopped.

2 Press PLAY.

PLAY ►

The DVD video player resumes playback from the location where you stopped playback.

■ To start playback from the beginning regardless of the location where you stopped playback

1 Press **STOP** twice.

STOP ■ The DVD video player's memory is cleared.

2 Press **PLAY**.

PLAY ►

DVD Playback starts from the beginning of the current title.

CD Playback starts from the beginning of the disc.

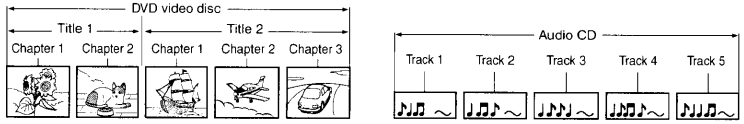
- If you want to return to the beginning of a DVD video disc, open and close the disc tray once with the OPEN/CLOSE button before pressing the PLAY button.

Notes

- The DVD video player's memory is also cleared when:
  - you unplug the DVD video player from the wall outlet after you stop playback.
  - you change the parental lock setting 〈40〉 or select a disc menu language 〈37〉.
  - you open the disc tray.
- There may be a difference in the location where playback resumes depending on the disc.
- Settings you changed using the on-screen displays while the DVD video player keeps a location in the memory may function only after the memory is cleared.

Locating a Specific Title, Chapter, or Track

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. Audio CDs are divided into tracks. You can quickly locate any specific title, chapter, or track.



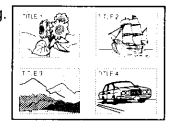
Locating a title using the title menu

1 Press TITLE.

TITLE

The title menu appears on the TV screen.

e.g.



2 Press ▲/▼/◄/► to select the title you want.

If the titles in the title menu are assigned a number, you can directly locate a specific title by pressing its designated number with the number buttons.

3 Press ENTER.

ENTER

Playback starts from chapter 1 of the selected title.

Notes

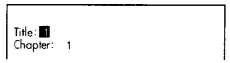
- The instructions above describe basic procedures which may vary depending on the contents of the DVD video disc. If different instructions appear on the TV screen, follow those instructions.
- If you display the title menu during playback and press the TITLE button again without selecting any title, the DVD video player may resume playback from the point where you first pressed the TITLE button (depending on the actual DVD video disc.)
- This method of locating a title is available only on a disc that contains a title menu.
- Instruction notes of discs may refer to the button that displays the title menu as TOP MENU button.

Locating a title by entering the title number

1 Press T.

T

Make sure that the space next to "Title" is highlighted.
(You can shift the highlight using the ▲/▼ buttons.)



2 Press the corresponding number buttons for the title you want.

e.g. To select title 2 [2]

To select title 12 [1] → [2]

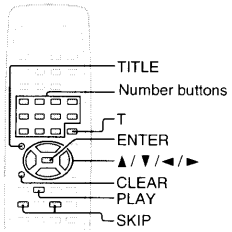
3 Press PLAY.

PLAY

Playback starts from chapter 1 of the selected title.

Notes

- Pressing the CLEAR button resets the title and chapter numbers. To clear the "Title" and "Chapter" display, press the T button several times.
- This method of locating a title is available only on a disc that contains title numbers.



Locating a specific chapter or track directly

1 Press T.

Skip steps 1 and 2 if you are using an audio CD.

T

2 Press ▼ to highlight the space next to "Chapter."

▼

3 Press the corresponding number buttons for the chapter or track you want.

You can use the +10 button to select numbers from 10 through 99.

e.g. To select chapter or track 25

[2] → [5]

or [+10] → [+10] → [5]

4 Press PLAY.

PLAY

Playback starts from the selected chapter or track.

■ To select a title and chapter number at the same time

Press the ▲/▼ buttons to highlight the space next to "Title", and enter the title number using the number buttons.

Note

Pressing the CLEAR button resets the title and chapter numbers. To clear the "Title" and "Chapter" display, press the T button several times.

Locating a specific chapter or track

Press SKIP ⏮ or ⏭ repeatedly to display the chapter or track number you want.

Playback starts from the selected chapter or track.

SKIP ⏭

To locate succeeding chapters or tracks

SKIP ⏮

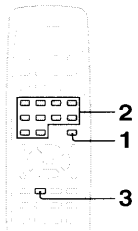
Playback starts from the beginning of the current chapter or track.
When you press twice, playback starts from the beginning of the preceding chapter or track.

Notes

- Some titles may not display chapter numbers.
- If you press and hold the SKIP ⏮ or ⏭ button during playback, the DVD player performs fast reverse or fast forward playback. You can select the speed by pressing the button repeatedly.
  To locate chapters or tracks during fast reverse or fast forward playback, first press the PLAY button to resume normal playback, then use the SKIP ⏮ or ⏭ button.
- When you set "Title Stop" to "Off" [41], you can access chapters in another title. If you go back to the preceding title by pressing the SKIP ⏮ button, the DVD video player locates the first chapter of the title. When "Title Stop" is set to "On," you can access chapters only within the current title.

Locating a Specific Location Directly

You can locate a specific location by entering its corresponding time (hours, minutes, seconds).

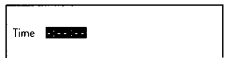


DVD CD Entering the time of the desired location

1 Press T twice.

T

You may have to press further depending on the disc. Press the button repeatedly until the following display appears.



2 Press the number buttons to enter the time.

e.g. 1 → 2 → 5 → 3 → 0

3 Press PLAY.

PLAY

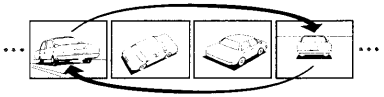
Playback starts from the desired location.

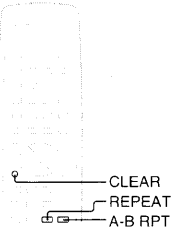
Notes

- Some discs may not respond to this process.
- Some scenes may not be located precisely as you specified.
- This method for accessing specific locations is available only within the current title of the DVD video disc or within the current track of the audio CD.

Playing Repeatedly

You can play a specific title, chapter, track, or segment repeatedly. (Title repeat, chapter/track repeat, A-B repeat)





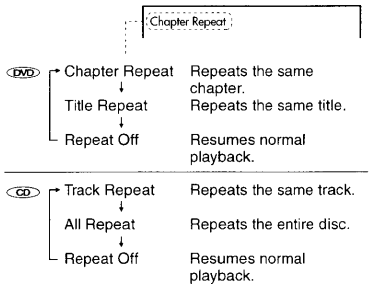
DVD CD Repeating a title, chapter, or track

1 Select the title, chapter, or track you want to repeat. 24 25

2 Press REPEAT.

REPEAT

Each time you press the REPEAT button, the repeat mode changes as follows.



■ To resume normal playback

Press **CLEAR**.

CLEAR

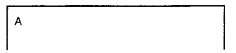
Note

Some discs may not permit repeat operation.

DVD CD Repeating a specific segment

1 Press A-B RPT at the beginning of the segment (point A) you want to play repeatedly.

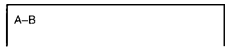
A-B RPT



2 Press A-B RPT again at the end of the segment (point B).

A-B RPT

The DVD video player automatically returns to point A and starts repeat playback of the selected segment (A-B).



■ To resume normal playback

Press **CLEAR**.

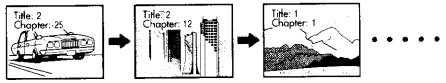
CLEAR

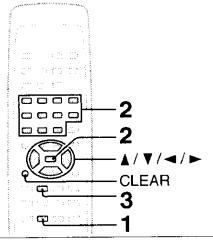
Notes

- Some discs may not permit A-B repeat operation.
- You cannot set the A-B repeat function for a segment that includes multiple camera angles 31.
- You can specify a segment only within the current title or track.
- There may be a slight difference between point A and the location where playback actually resumes depending on the disc.

Playing in a Favorite Order

You can combine your favorite titles, chapters, or tracks and play them in any order. You can program up to 28 selections into the memory. (Memory playback)



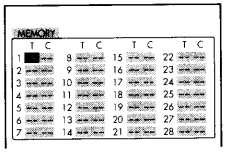


DVD CD Setting titles, chapters, or tracks in a favorite order

1 Insert a disc and press MEMORY during stop.

MEMORY

The following display appears.

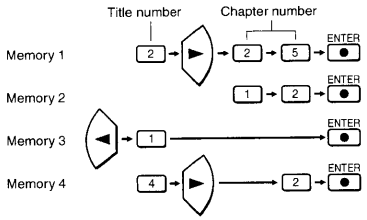


T: Title number or track number
C: Chapter number

2 Select the items in the order you want by pressing the number buttons, then ENTER for each item.

Each time you press the ◄ / ► button, the space of "T" and "C" is highlighted in turn. Highlight where you want to enter, then press the number buttons.

e.g. To play chapter 25 in title 2, chapter 12 in title 2, all the chapters in title 1, and chapter 2 in title 4.



To select another chapter in the same title, you do not need to select the title number.

To select tracks from an audio CD in order, press the **number buttons** for the track, then press the **ENTER** button for each selection you want.

3 Press PLAY while the MEMORY display appears on the TV screen.

PLAY

The DVD video player starts memory playback.

■ To change the programmed selections

1 While the MEMORY display appears on the TV screen, press ▲ / ▼ to move the highlighted bar to the item you want to change.
2 Change the selection following the instructions in step **2**.

■ To cancel the programmed selections

1 While the MEMORY display appears on the TV screen, press ▲ / ▼ to move the highlighted bar to the item you want to cancel.
2 Press **CLEAR**.

■ To resume normal playback from memory playback

Press **CLEAR**.

CLEAR

The memory playback indicator disappears.

■ To program during playback

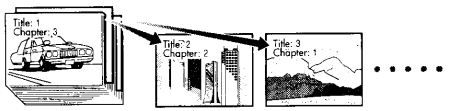
If you press the **MEMORY** button during playback, a display appears to accept your programming.
If you further press the **DISPLAY** button, you can display the MEMORY setting also. Follow steps **2** and **3**.

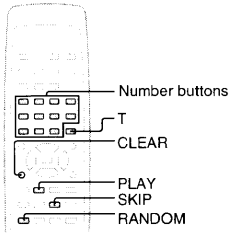
Notes

- Some discs may not permit memory playback operation.
- If you press the REPEAT button during memory playback, the DVD video player repeats the current memory playback.
- If you press the MEMORY or RETURN button while the MEMORY display appears on the TV screen, the MEMORY display disappears.
- The programmed selections will be cleared when you turn off the DVD video player.

Playing in Random Order

You can play titles, chapters within a title, or tracks in random order. (Random playback)

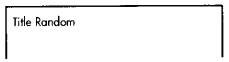




DVD Playing titles in random order

1 Press RANDOM twice during stop.

RANDOM



If you press the RANDOM button during playback, the DVD video player automatically starts random playback after finishing the current title.

2 Press PLAY.

PLAY

The DVD video player starts random playback.
Press the PLAY button within about 5 seconds after you press the RANDOM button.

■ To resume normal playback

Press **CLEAR**.

CLEAR

Notes

- Some discs may not permit random playback operation.
- You cannot use the random playback function in conjunction with the memory playback function.

DVD CD Playing chapters or tracks in random order

1 Press the appropriate number buttons for the title which contains the chapters you want to play in random order.

Skip this step if you are using an audio CD.

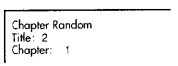
e.g. To play the chapters in title 2 in random order

T → 2

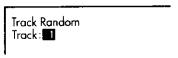
2 Press RANDOM during stop.

RANDOM

DVD



CD



If you press the RANDOM button during playback, the DVD video player automatically starts random playback after finishing the current chapter or track.

3 Press PLAY.

PLAY

The DVD video player starts random playback.
Press the PLAY button within about 5 seconds after you press the RANDOM button.

■ To resume normal playback

Press **CLEAR**.

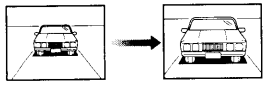
CLEAR

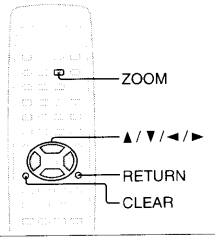
Notes

- Some discs may not permit random playback operation.
- You cannot use the random playback function in conjunction with the memory playback function.
- If you press the SKIP ►►I button during random playback, the DVD video player goes to another chapter or track and starts random playback.

Zooming a Picture

You can magnify areas within a picture.





Zooming a picture

Press ZOOM during normal, slow or still playback.

ZOOM — If you further press the ZOOM button repeatedly, the magnification level increases.

RETURN — To reduce the magnification level, press the RETURN button.

If you press the ▲/▼/◄/► buttons, the zoom point shifts.
When the zoom point reaches an edge of the picture, the color of "Zoom" changes.

CLEAR — Pressing the CLEAR button restores the zoom point to the center of the picture.

■ To resume normal playback

Press **ZOOM** repeatedly so that "Zoom" disappears.

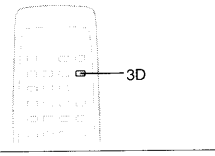
ZOOM

Notes

- Some discs may not respond to zoom feature.
- During some scenes, the buttons may not work as described in the left column.
- Zooming does not work on subtitles or menus included on DVD video discs.
- During zoom playback, the ▲/▼/◄/► buttons cannot work on menus included on the DVD video discs. If you want to view the menus, cancel the zoom playback.
- The magnification level varies depending on the picture size you select. 〈38〉

Selecting 3-D (N-2-2) Sound Enhancement

You can enjoy expansive virtual surround sound effects from just two speakers.

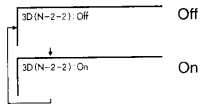


Selecting 3-D (N-2-2) sound enhancement

Press 3D during playback.

3D — The current setting is displayed.

Each time you press the 3D button, the setting changes as follows.



Off

On

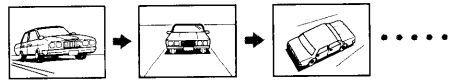
Notes

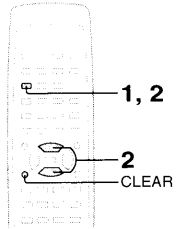
- You may sense a difference in volume between normal and 3-D (N-2-2) enhanced sound.
- 3-D (N-2-2) sound enhancement may not function (or may not be realized) depending on the sound output setting or recording system 〈33〉.
- If 3-D (N-2-2) sound enhancement is on, Dolby Pro Logic Surround may not function on output sounds at all, or may function differently than usual.

Spatializer® 3-Dimensional Sound Processing provided by Desper Products, Inc.
Certain audio features of this product manufactured under a license from Desper Products, Inc., Spatializer® and the circle-in-square device are trademarks owned by Desper Products, Inc.

Selecting the Camera Angle

If the scene was recorded from multiple angles, you can easily change the camera angle of the scene you are watching.



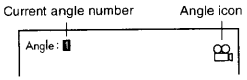


Changing the camera angle

1 Press ANGLE while playing a scene recorded with multiple angles.

ANGLE

While playing a scene recorded with multiple angles, the angle icon appears in the DVD display and on the TV screen.
Press the ANGLE button while the angle icon is displayed.

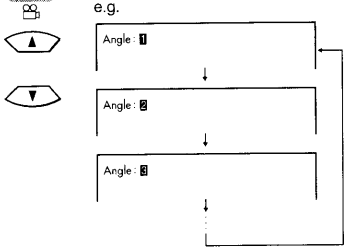


2 Press ANGLE or ▲ while the angle number is displayed on the TV screen.

ANGLE

Each time you press the ANGLE or ▲ button, the camera angle changes.

e.g.



▼: Cycles backwards

You can change the camera angle directly by pressing the number buttons corresponding to its angle number instead of using the ▲/▼ buttons.

■ To turn off the angle number display

Press **CLEAR**.

CLEAR

■ To disable the angle icon display on the TV

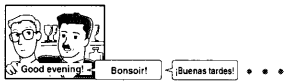
From the on-screen displays, set "On-Screen Displays" to "Off." 〈40〉
Monitor the DVD display when you want to change the camera angle.

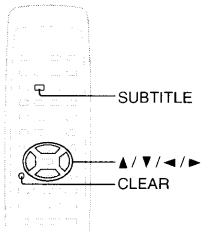
Notes

- You can change the camera angle during still playback. The camera angle changes to the new setting when you resume normal playback.
- If you pause a picture immediately after changing a camera angle, the resumed playback picture may not display the new camera angle.

Selecting Subtitles

You can display subtitles on the TV screen and select a subtitle language from those included on the DVD video disc.



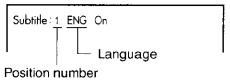


Selecting a subtitle language

1 Press SUBTITLE during playback.

SUBTITLE

The current subtitle setting is displayed for about 3 seconds.



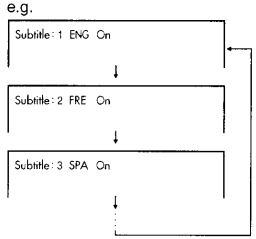
The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 42

2 Press SUBTITLE or ▲ while the subtitle setting is displayed on the TV screen.

SUBTITLE

Each time you press the SUBTITLE or ▲ button, the subtitle languages included on the DVD video disc change.

e.g.



▼ : Cycles backwards

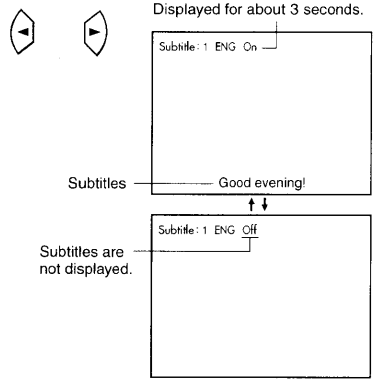
To turn off the subtitle setting display, press the CLEAR button.

■ To turn subtitles on or off

1 Press **SUBTITLE** during playback.

SUBTITLE

2 Press ◄ / ► while the subtitle setting is displayed on the TV screen, to select "On" or "Off."



Notes

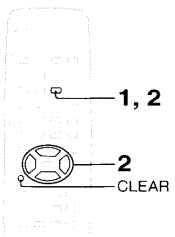
- Some DVD video discs are set to display subtitles automatically, and you cannot turn them off even if you set the subtitle function to off.
- During some scenes, the subtitles may not appear immediately after you select "On."
- Some DVD video discs will allow you to make subtitle selections and turn subtitles on or off only via the disc menu.

Notes

- When you turn on the DVD video player or replace a disc, the player returns to the initial default setting 37.
  When you select a subtitle language which is not included on the disc, the DVD video player plays a prior language programmed on the disc.
- During some scenes, the subtitles may not appear immediately after you change the subtitle language by pressing the ▲ / ▼ buttons.

Selecting a Language

You can select a preferred language and sound recording system from those included on the DVD video disc.

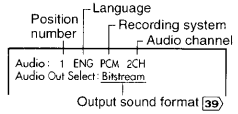


Selecting a playback audio setting

1 Press AUDIO during playback.

AUDIO

The current audio setting is displayed for about 3 seconds.



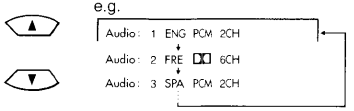
The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 42

2 Press AUDIO or ▲ while the audio setting is displayed on the TV screen.

AUDIO

Each time you press the AUDIO or ▲ button, the audio settings included on the DVD video disc change.

e.g.



▼ : Cycles backwards

If you press the ◄ / ► buttons, you can select output sound format. 39

To turn off the audio setting display, press the CLEAR button.

■ About recording systems

This DVD video player uses the Dolby Digital, DTS, MPEG2 and PCM recording systems and cannot play DVD video discs recorded in any other recording system.

Dolby Digital 5.1 Channel may be displayed as " DD 6CH."

Notes

- When you turn on the DVD video player or replace a disc, player returns to the initial default setting 37.
  When you select a sound track which is not included on the disc, the DVD video player plays a prior sound track programmed on the disc.
- Some discs allow you to change audio selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate language from the selections on the disc menu.

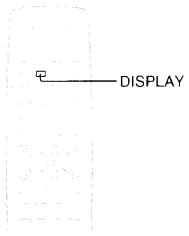
■ Output sound conversion table (sampling frequency/quantization bit)

Discs	Recording system		Audio selection from the menu 35 39 and output jacks on the rear panel					
			"Bitstream"		"Analog 2ch"		"PCM"	
			BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks	BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks	BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks
DVD video discs	Dolby Digital		Bitstream	48 kHz/20 bit	Bitstream	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
	Linear PCM	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		48 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit	—	48 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit
		96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	—	96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	—	96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		96 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit	—	96 kHz/24 bit	48 kHz/16 bit	48 kHz/20 bit
	DTS		Bitstream	—	Bitstream	—	—	—
	MPEG2		Bitstream (7.1ch)	—	Bitstream (2ch)	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
Audio CDs	Linear PCM 44.1 kHz/16 bit		44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
	DTS		Bitstream	(Noise)	Bitstream	(Noise)	Bitstream	(Noise)

: 3-D (N-2-2) sound enhancement can function.

Viewing the Operational Information

You can view information about a disc and its operational status on the TV screen.

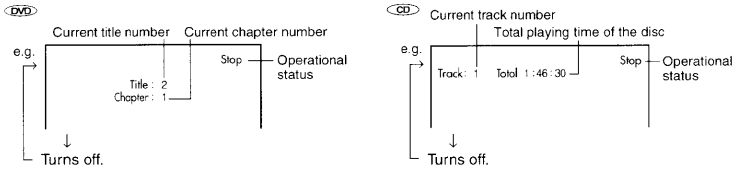


DVD CD Checking the operational status

Press DISPLAY during stop.

DISPLAY

Each time you press the DISPLAY button, the on-screen display changes as follows.

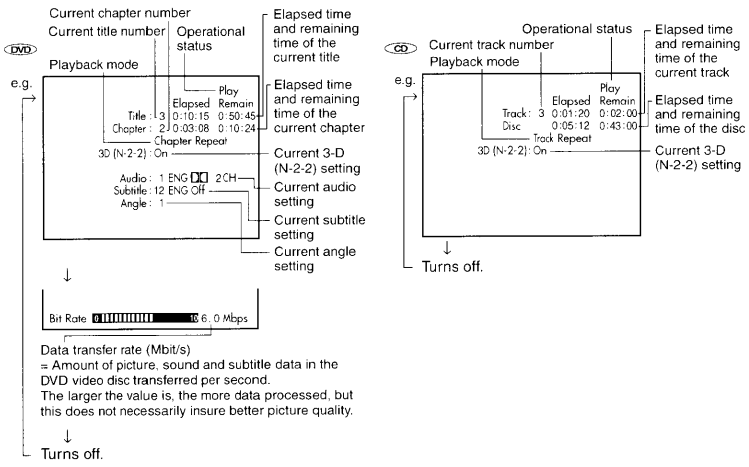


DVD CD Checking the remaining time and setting status

Press DISPLAY during playback.

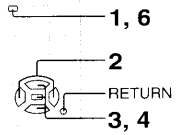
DISPLAY

Each time you press the DISPLAY button, the on-screen display changes as follows.


DVD
Current chapter number
Current title number
Operational status
Playback mode
e.g.
Play
Elapsed Remain
Title : 3 0:10:15 0:50:45
Chapter : 2 0:03:08 0:10:24
Chapter Repeat
3D (N-2-2) : On
Audio : 1 ENG 2CH
Subtitle : 12 ENG Off
Angle : 1
Elapsed time and remaining time of the current title
Elapsed time and remaining time of the current chapter
Current 3-D (N-2-2) setting
Current audio setting
Current subtitle setting
Current angle setting
Bit Rate
6.0 Mbps
Data transfer rate (Mbit/s)
= Amount of picture, sound and subtitle data in the DVD video disc transferred per second.
The larger the value is, the more data processed, but this does not necessarily insure better picture quality.
Turns off.
CD
Operational status
Current track number
Playback mode
e.g.
Play
Elapsed Remain
Track : 3 0:01:20 0:02:00
Disc 0:05:12 0:43:00
Track Repeat
3D (N-2-2) : On
Elapsed time and remaining time of the current track
Elapsed time and remaining time of the disc
Current 3-D (N-2-2) setting
Turns off.

Customizing the Function Settings

You can change the default settings to customize performance to your preference.

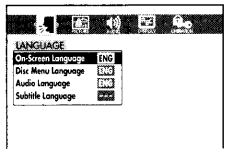


DVD CD Setting procedure

1 Press SETUP during stop.

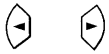
SETUP

The following on-screen display appears.



2 Press ◄ / ► to select a symbol for the setting you want to change.

(See the next page.)



Settings on languages

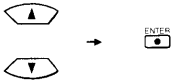
Settings on playback picture conditions

Settings on sound output

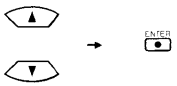
Settings on displays

Settings on operational options

3 Press ▲ / ▼ to select the setting you want to change, then press ENTER.



4 Change the selection by ▲ / ▼ or other buttons, referring to the pages from 37, then press ENTER.



5 Repeat steps 3 and 4 to change other settings.

To select another symbol, go back to step 2.

6 Press SETUP.

SETUP

The on-screen display disappears.

■ To return to the previous display

Press **RETURN**.

RETURN

Notes

- The on-screen display disappears when you press the SETUP button.
- The SETUP button can function even during normal playback, however some operations may be inaccessible, and a message will appear. In this case, try again after playback is stopped.

Customizing the Function Settings (continued)

	Setting		Details	Page
LANGUAGE	On-Screen Language	DVD CD	To select a preferred language for on-screen displays.	37
	Disc Menu Language	DVD	To select a preferred language for disc menus.	37
	Audio Language	DVD	To select a preferred language for the sound track.	37
	Subtitle Language	DVD	To select a preferred language for subtitles.	37
PICTURE	TV Shape	DVD	To select a picture size according to the aspect ratio of your TV.	38
	Black Level	DVD	To select the black level of playback pictures.	38
AUDIO	Audio Out Select	DVD CD	To select an output sound format corresponding to your system connection.	39
	Dynamic Range Control	DVD	To turn on or off a function that makes faint sounds easier to hear even if you lower the volume during late hours playback.	39
	Karaoke Vocal	DVD	To turn on or off the vocal output during DVD KARAOKE disc playback.	39
	Extended Audio Features	DVD	To turn on or off a special language for visually impaired persons.	39
DISPLAY	On-Screen Displays	DVD CD	To turn on or off the operational status display on the TV screen.	40
	OSD Background Color	DVD CD	To select the background color for on-screen displays.	40
	Extended Subtitle Features	DVD	To turn on or off special subtitles for hearing impaired persons.	40
	Screen Saver	DVD	To turn on or off the screen saver.	40
OPERATION	Pause/Still	DVD	To select the resolution of still pictures. (Field/Frame)	40
	Parental Lock	DVD	To turn on or off the parental lock function.	40
	Remote Confirmation	DVD CD	To turn on or off the confirmation beeper for each remote command received.	41
	Title Stop	DVD	To turn on or off a feature that automatically stops playback after a title has been viewed.	41

Setting details

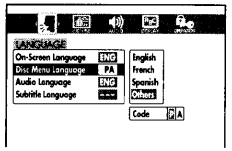
On-Screen Language DVD CD

English: To view on-screen displays in English.
French: To view on-screen displays in French.
Spanish: To view on-screen displays in Spanish.

Disc Menu Language DVD

English: To display disc menus in English.
French: To display disc menus in French.
Spanish To display disc menus in Spanish.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 42.
2) Select the first character by pressing the ▲ / ▼ buttons.
3) Press the ◄ / ► buttons to shift and select the second character by pressing the ▲ / ▼ buttons.



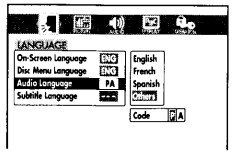
4) Press the ENTER button.

Note
Some DVD video discs may not include your pre-selected language. In this case, the DVD video player automatically displays disc menus consistent with the disc's initial language setting.

Audio Language DVD

English: To play sound tracks in English.
French: To play sound tracks in French.
Spanish: To play sound tracks in Spanish.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 42.
2) Select the first character by pressing the ▲ / ▼ buttons.
3) Press the ◄ / ► buttons to shift and select the second character by pressing the ▲ / ▼ buttons.



4) Press the ENTER button.

Note
Some DVD video discs may be played in a different language than you selected. A prior language may be programmed on the disc.

Subtitle Language DVD

English: To display subtitles in English.
French: To display subtitles in French.
Spanish: To display subtitles in Spanish.
No Subtitles: To disable subtitles.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 42.
2) Select the first character by pressing the ▲ / ▼ buttons.

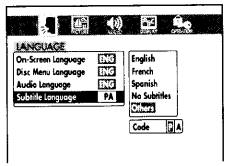
(Continued)

Customizing the Function Settings (continued)

Setting details

(Continued)

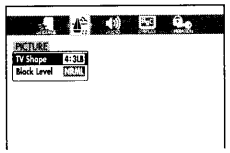
3) Press the ◄ / ► buttons to shift and select the second character by pressing the ▲ / ▼ buttons.



4) Press the ENTER button.

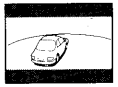
Notes
- Some DVD video discs may be set to display subtitles in a different language than you selected. A prior subtitle language may be programmed on the disc.
- Some DVD video discs allow you to change subtitle selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate subtitle language from the selection on the disc menu.

PICTURE

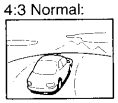


TV Shape (DVD)

4:3 LetterBox: Select when a standard 4:3 TV is connected.
Displays theatrical images with masking bars above and below the picture.



4:3 Normal: Select when a standard 4:3 TV is connected.
Displays pictures cropped to fill your TV screen. Either or both sides of the picture are cut off.



16:9 Widescreen: Select when a 16:9 wide TV is connected.

Notes
- The displayable picture size is preset on the DVD video disc. Therefore, the playback picture of some DVD video discs may not conform to the picture size you select.
- When you play DVD video discs recorded in the 4:3 picture size only, the playback picture always appears in the 4:3 picture size regardless of the TV shape setting.
- If you select "16:9 Widescreen" and you own a 4:3 TV set, the DVD playback picture will be horizontally distorted during playback. Images will appear to be horizontally compressed. Always be sure that your TV shape conforms to the actual TV in use.

Black Level (DVD)

Set to your preference and monitor's ability.

Enhanced: Expanded black level. (0 IRE)
Normal: Standard black level. (7.5 IRE)

AUDIO

Audio Out Select (DVD) (CD)

Select the output sound format corresponding to your system connection.
For details of sound recording systems, see 33.

Bitstream: Select when connected to an amplifier equipped with a Dolby Digital, DTS, MPEG1 or MPEG2 decoder. 18 19
The DVD video player outputs digital audio information in the bitstream format when you play a DVD video disc recorded on the Dolby Digital, DTS, MPEG1 or MPEG2 recording system.

Analog 2ch: Select when connected to a TV, or Dolby Pro Logic or stereo system via the analog audio jacks. 16 18

PCM: Select when connected to a 2 channel digital stereo amplifier. 19
The DVD video player outputs sounds in the PCM 2ch format when you play a DVD video disc recorded on the Dolby Digital, MPEG1 or MPEG2 recording system.

Dynamic Range Control (DVD)

Off: Full dynamic range is maintained.
On: Dynamic range is reduced.

Notes
- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on the DVD video disc.

Karaoke Vocal (DVD)

Off: The primary vocal is not output.
On: The primary vocal is output when it is recorded on the disc.

Notes
- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing KARAOKE, connect appropriate audio equipment such as an amplifier to the DVD video player.

Extended Audio Features (DVD)

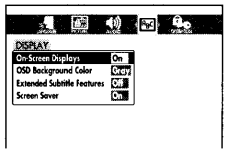
Some DVD video discs contain a special language track that describes the actions on-screen for visually impaired persons. The DVD video player automatically plays this special feature.

Off: This function does not work.
On: This function works.

1-19

Customizing the Function Settings (continued)

Setting details



On-Screen Displays (DVD) (CD)

Off: Operational modes (e.g. "Play", " ") are not displayed.
On: Operational modes (e.g. "Play", " ") are displayed on-screen.

OSD Background Color (DVD) (CD)

Blue: Blue background.
Gray: Gray background.

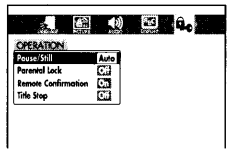
Extended Subtittle Features (DVD)

Some DVD video discs contain special subtitles, an enhancement of closed captioning for hearing impaired persons. The DVD video player automatically displays these special subtitles.

Off: This function does not work.
On: This function works.

Screen Saver (DVD)

Off: The screen saver does not work.
On: The screen saver works.



Pause/Still (DVD)

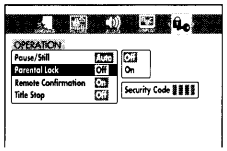
Auto: For normal use. Images can be paused without shaking.
Frame: The resolution of still pictures is improved, so that you can make a motionless picture more clearer when you pause it.

Parental Lock (DVD)

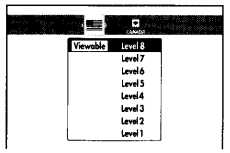
DVD video discs equipped with the parental lock function are rated according to their content. The contents allowed by a parental lock level and the way a DVD video disc can be controlled may vary from disc to disc. For example, if the disc allowed you could edit out violent scenes unsuitable for children and replace them with more suitable scenes, or lock out playback of the disc altogether.

- DVD video discs may or may not respond to the parental lock settings. This is not a defect in the DVD video player. Make sure this function works with your DVD video discs.

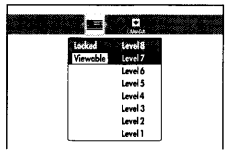
Off: The parental lock feature does not function. After pressing the ENTER button, follow step 1) below.
On: To activate the parental lock feature or change the settings. After pressing the ENTER button, follow steps 1) - 3) below.



1) Press the number buttons to create a personal 4-digit security code, then press ENTER.
If you make a mistake before pressing the ENTER button, press the CLEAR button and enter your 4-digit security code again.
2) Press the ◄ / ► buttons to select the country whose standards were used to rate the DVD video disc.



3) Press the ▲ / ▼ buttons to select the parental lock level, then press the ENTER button.



You cannot play DVD video discs rated higher than the level you selected unless you cancel the parental lock function.
For example, when you select level 7, discs rated higher than level 7 are locked out and cannot be played.

The parental lock level is equivalent to the following USA movie ratings.
Level 7: NC-17
Level 6: R
Level 4: PG 13
Level 3: PG
Level 1: G

The parental lock levels for "CANADA" are included for future use. Check the appropriate parental lock level when you buy a DVD video disc equipped with the parental lock feature in the future.

■ To change the parental lock level
Follow steps 1) - 3).

■ To change your 4-digit security code
1) After selecting "On" or "Off," press the STOP button four times, then press the ENTER button.

STOP → STOP → STOP → STOP → ENTER

The 4-digit security code is cleared.
2) Press the number buttons to create a new 4-digit security code.
3) Press the ENTER button.

Remote Confirmation (DVD) (CD)

Off: The beeper does not sound.
On: The beeper sounds with each remote operation.

Title Stop (DVD)

Off: The DVD video player continues after playback of a title is completed.
On: The DVD video player stops after playback of a title is completed.

Table of Languages

Table of languages and their abbreviations

Abbreviation	Language
– – –	No alternate language
CHI (ZH)	Chinese
DUT (NL)	Dutch
ENG (EN)	English
FRE (FR)	French
GER (DE)	German
ITA (IT)	Italian
JPN (JA)	Japanese
KOR (KO)	Korean
MAY (MS)	Malay
SPA (ES)	Spanish
AA	Afar
AB	Abkhazian
AF	Afrikaans
AM	Amharic
AR	Arabic
AS	Assamese
AY	Aymara
AZ	Azerbaijani
BA	Bashkir
BE	Belorussian
BG	Bulgarian
BH	Bihari
BI	Bislama
BN	Bengali, Bangla
BO	Tibetan
BR	Breton
CA	Catalan
CO	Corsican
CS	Czech
CY	Welsh
DA	Danish
DZ	Bhutani
EL	Greek
EO	Esperanto
ET	Estonian
EU	Basque
FA	Persian
FI	Finnish
FJ	Fiji
FO	Faroese
FY	Frisian
GA	Irish
GD	Scottish Gaelic
GL	Galician

Abbreviation	Language
GN	Guarani
GU	Gujarati
HA	Hausa
HI	Hindi
HR	Croatian
HU	Hungarian
HY	Armenian
IA	Interlingua
IE	Interlingue
IK	Inupiak
IN	Indonesian
IS	Icelandic
IW	Hebrew
JI	Yiddish
JW	Javanese
KA	Georgian
KK	Kazakh
KL	Greenlandic
KM	Cambodian
KN	Kannada
KS	Kashmiri
KU	Kurdish
KY	Kirghiz
LA	Latin
LN	Lingala
LO	Laotian
LT	Lithuanian
LV	Latvian, Lettish
MG	Malagasy
MI	Maori
MK	Macedonian
ML	Malayalam
MN	Mongolian
MO	Moldavian
MR	Marathi
MT	Maltese
MY	Burmese
NA	Nauru
NE	Nepali
NO	Norwegian
OC	Occitan
OM	(Afan) Oromo
OR	Oriya
PA	Panjabi
PL	Polish
PS	Pashto, Pushto

Abbreviation	Language
PT	Portuguese
QU	Quechua
RM	Rhaeto-Romance
RN	Kirundi
RO	Rumanian
RU	Russian
RW	Kinyarwanda
SA	Sanskrit
SD	Sindhi
SG	Sango
SH	Serbo-Croatian
SI	Singhalese
SK	Slovak
SL	Slovenian
SM	Samoan
SN	Shona
SO	Somali
SQ	Albanian
SR	Serbian
SS	Siswati
ST	Sesotho
SU	Sundanese
SV	Swedish
SW	Swahili
TA	Tamil
TE	Telugu
TG	Tajik
TH	Thai
TI	Tigrinya
TK	Turkmen
TL	Tagalog
TN	Setswana
TO	Tongan
TR	Turkish
TS	Tsonga
TT	Tatar
TW	Twi
UK	Ukrainian
UR	Urdu
UZ	Uzbek
VI	Vietnamese
VO	Volapük
WO	Wolof
XH	Xhosa
YO	Yoruba
ZU	Zulu

Before Calling Service Personnel

Check the following guide for the possible cause of a problem before contacting service.

Symptoms and correction

Symptom	Cause	Correction	Page
No power.	• The power plug is disconnected.	• Connect the power plug securely into the wall outlet.	16
The DVD video player turned off by itself.	• The automatic power off function turned the unit off.	• Press the POWER button.	21
No picture.	• The TV is not set to receive DVD signal output.	• Select the appropriate video input mode on the TV so the picture from the DVD video player appears on the TV screen.	20
	• The video cable is not connected securely.	• Connect the video cable securely into the appropriate jacks.	16, 17
No sound.	• The equipment connected with the audio cable is not set to receive DVD signal output.	• Select the correct input mode of the audio receiver so you can listen to the sound from the DVD video player.	20
	• The audio cable is not connected securely.	• Connect the audio cable securely into the appropriate jacks.	16, 17 18, 19
	• The audio receiver or TV is turned off.	• Turn on the equipment connected with the audio cable.	20
	• The setting of output sound format is incorrect.	• Select the proper audio setting.	33, 35 39
The playback picture has occasional distortion.	• The disc is dirty.	• Eject the disc and clean it.	9
	• It is in fast forward or fast reverse playback.	• Sometimes a small amount of picture distortion may appear. This is not a malfunction.	–
Brightness is unstable or noises are present in the playback pictures.	• The effect of copy protection.	• Connect the DVD video player directly to the TV. Avoid connecting the DVD video player to a VCR or TV/VCR combination.	16
The DVD video player does not start playback.	• No disc is inserted.	• Insert a disc.	20
	• An unplayable disc is inserted.	• Insert a playable disc. (Check the disc type and color system.)	10
	• The disc is placed upside down.	• Place the disc with the playback side down.	20
	• The disc is not placed within the guide.	• Place the disc correctly inside the guide on the disc tray.	20
	• The disc is dirty.	• Clean the disc.	9
	• The parental lock function is set.	• Cancel the parental lock function or change the parental lock level.	35, 40
Playback does not follow the course of the disc's program.	• It is in the mode of repeat playback, memory playback, etc.	• These operations may prevent a proper progress of the contents.	–
Buttons do not work.	• Power supply fluctuations or other abnormalities such as static electricity may interrupt correct operations.	• Turn the power on or off with the POWER button. Or disconnect the power plug and insert it into the wall outlet again.	–
The remote control does not work properly.	• The remote control is not pointed at the remote sensor of the DVD video player.	• Point the remote control at the remote sensor of the DVD video player.	15
	• The remote control is too far from the DVD video player.	• Operate the remote control within about 7 m.	15
	• The batteries in the remote control are exhausted.	• Replace the batteries with new ones.	15

2. LOCATION OF MAIN PARTS AND MECHANISM PARTS

2-1. Location of Main Parts

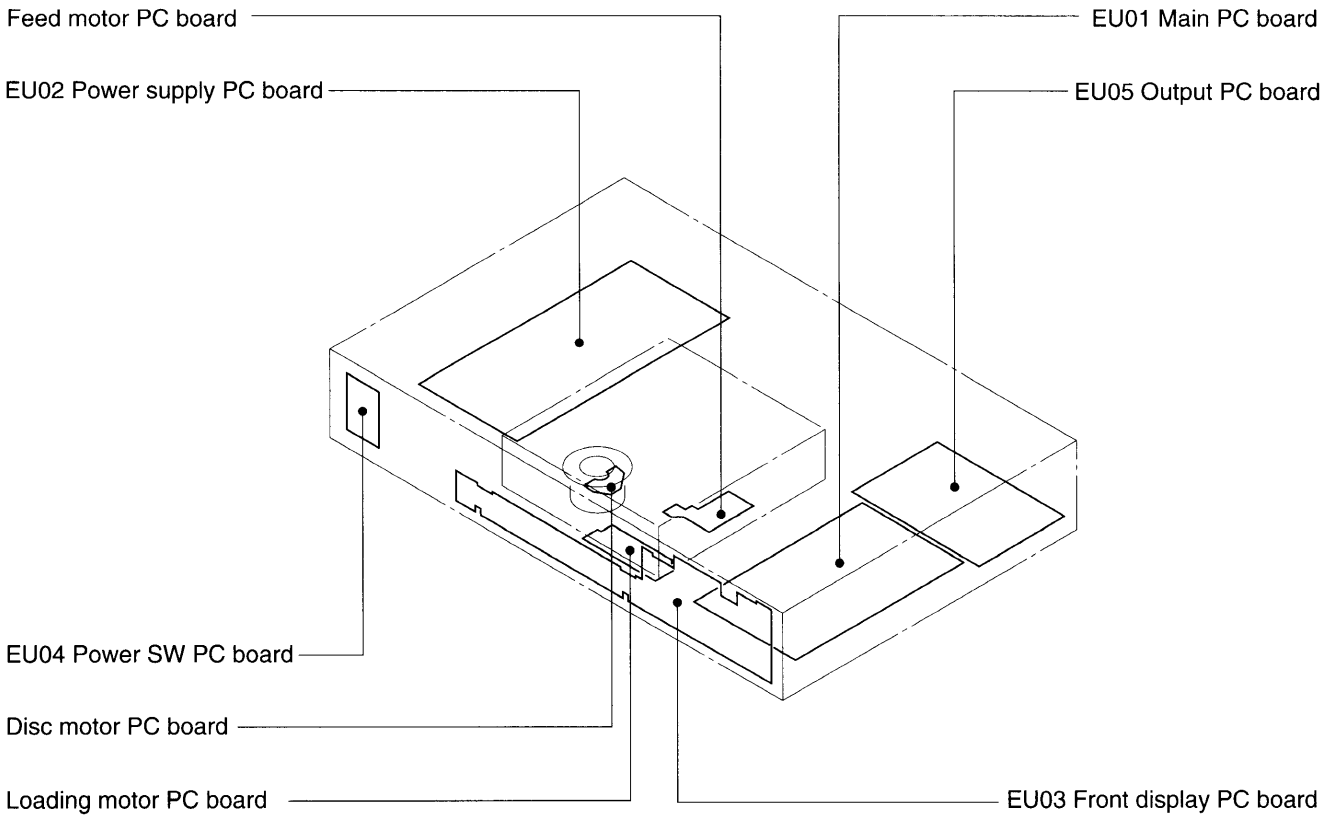

Feed motor PC board
EU02 Power supply PC board
EU01 Main PC board
EU05 Output PC board
EU04 Power SW PC board
Disc motor PC board
Loading motor PC board
EU03 Front display PC board

Fig. 1-2-1

2-2. Location of Mechanism Parts

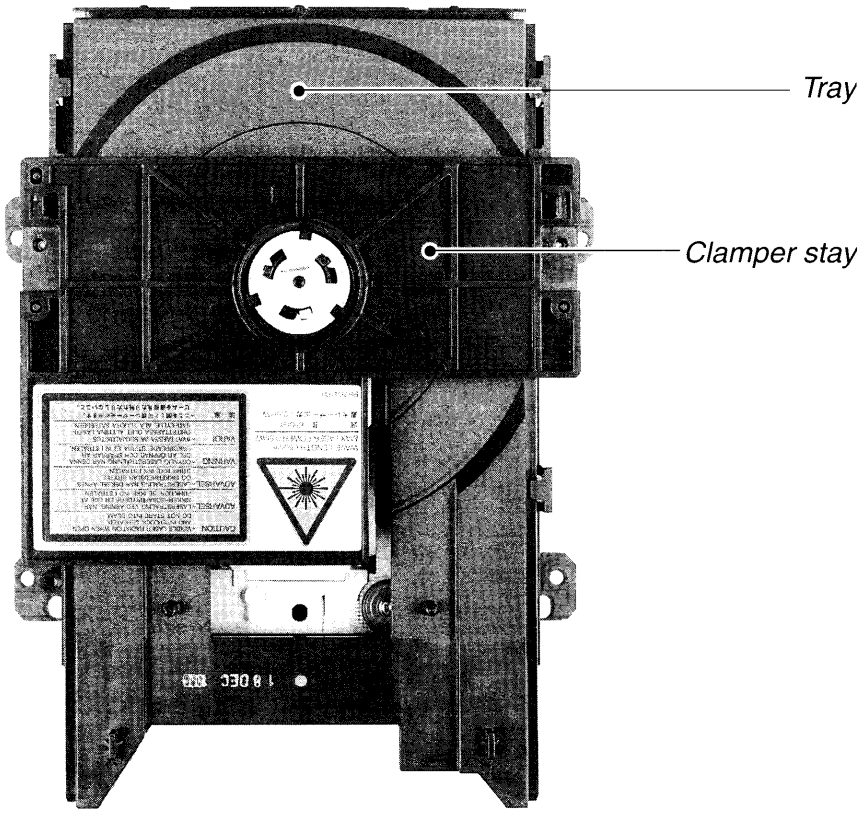


Fig. 1-2-2 Mechanism chassis assembly (Top side)

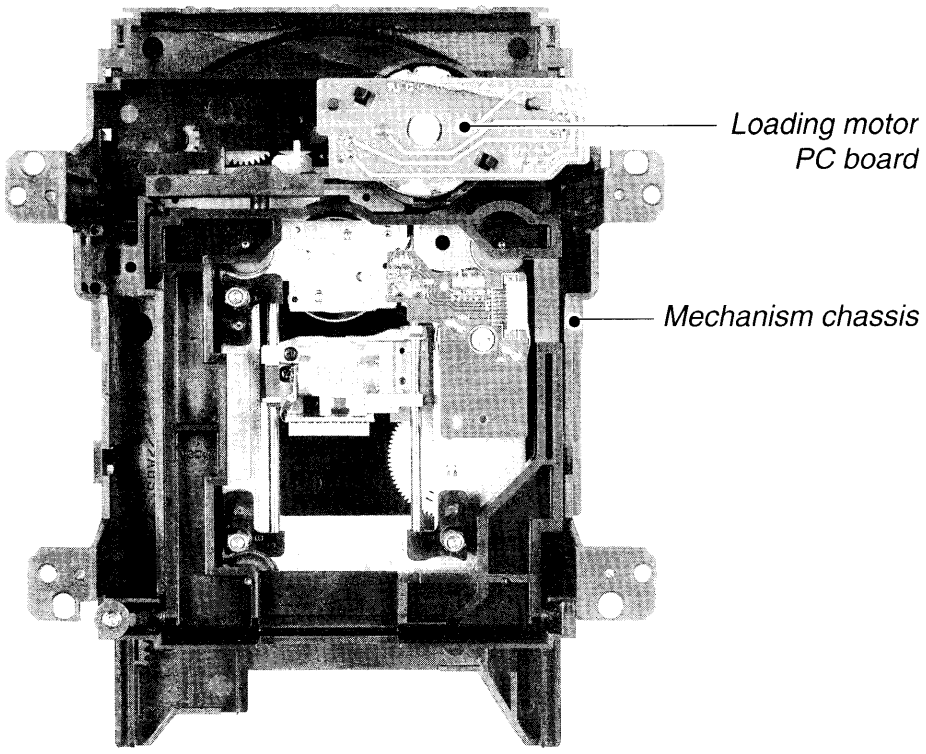


Fig. 1-2-3 Mechanism chassis assembly (Bottom side)

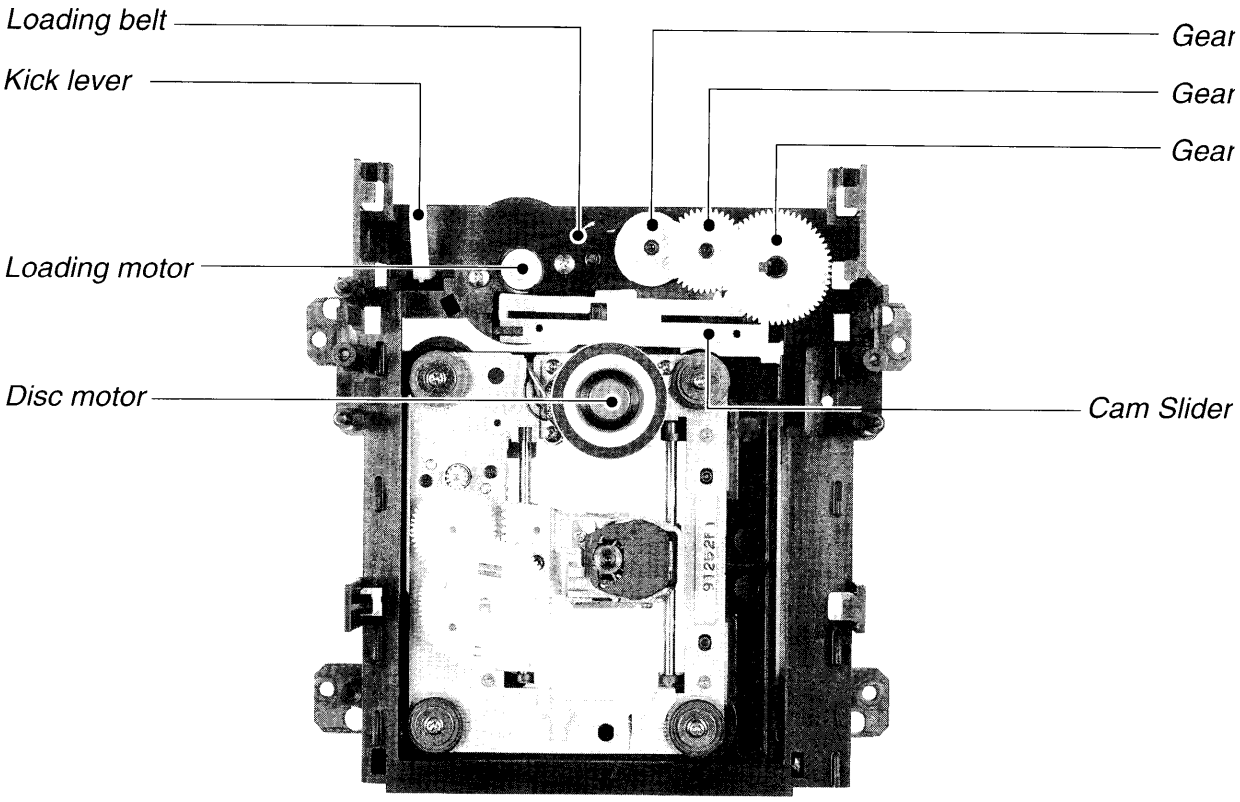


Fig. 1-2-4 Mechanism chassis assembly (Internal side)

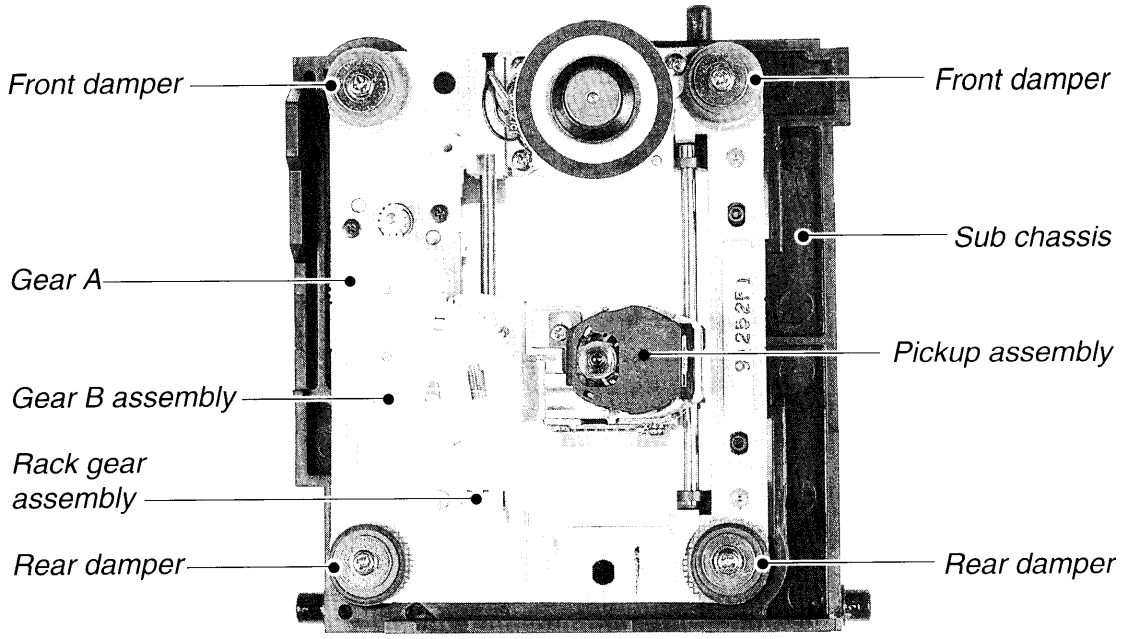


Fig. 1-2-5 Pickup mechanism chassis assembly (Top side)

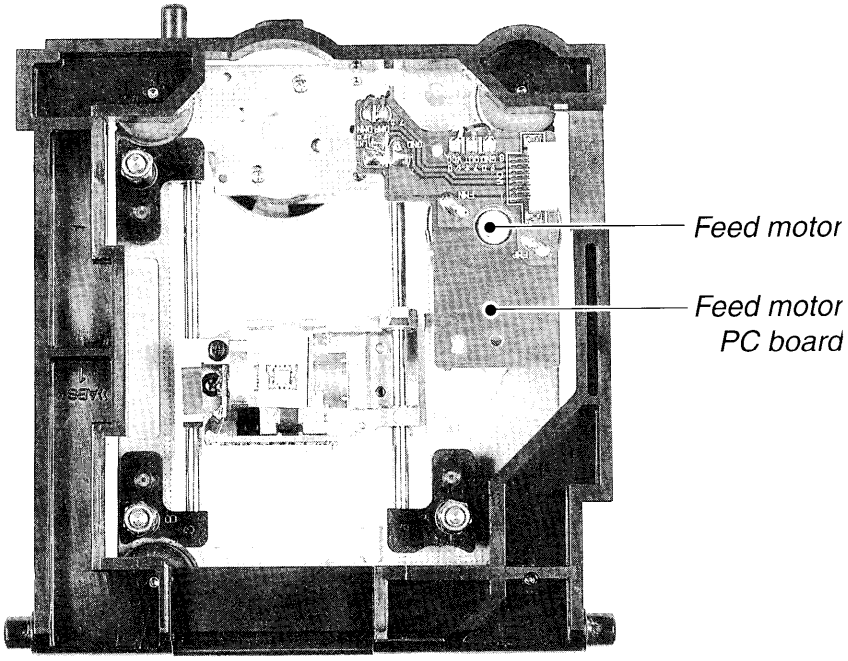


Fig. 1-2-6 Pickup mechanism chassis assembly (Bottom side)

3. TROUBLESHOOTING

3-1. Main Circuit

3-1-1. Servo System

(1) Initial Operation after Power ON

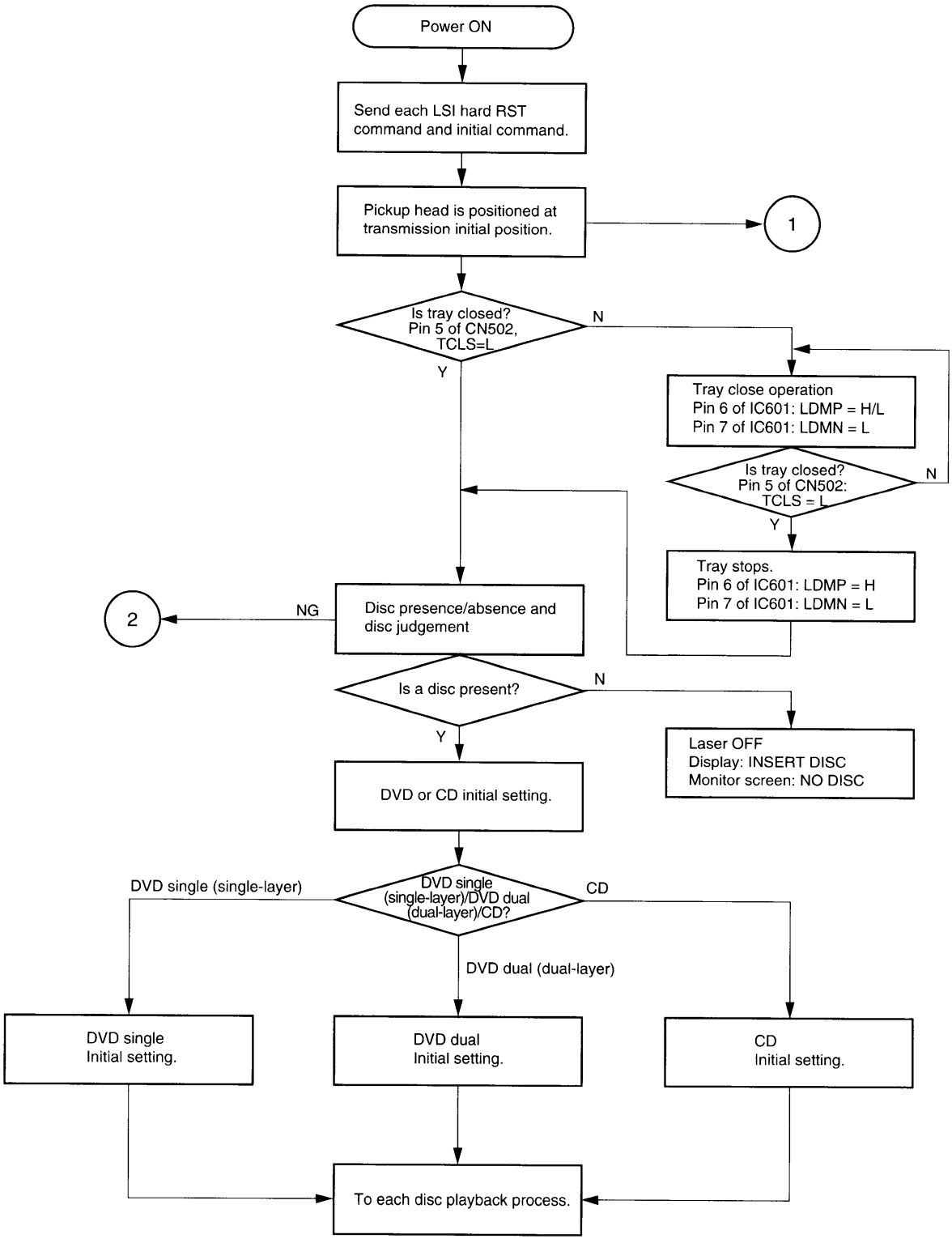


Fig. 1-3-1

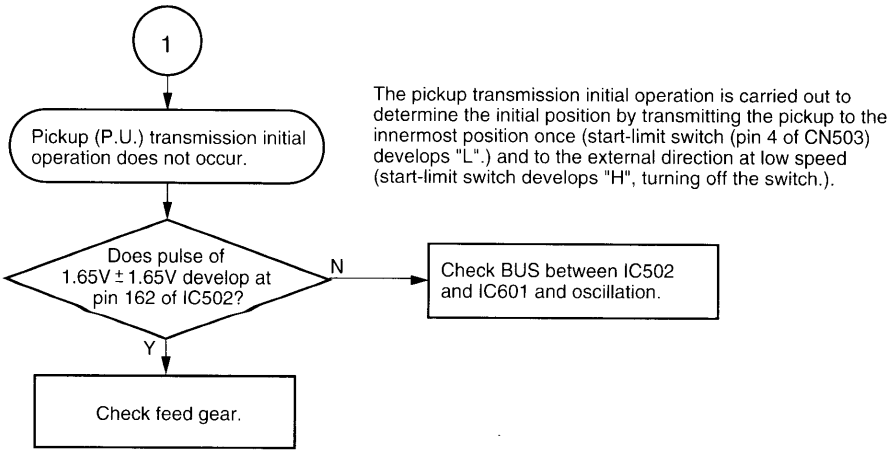

1
Pickup (P.U.) transmission initial operation does not occur.
The pickup transmission initial operation is carried out to determine the initial position by transmitting the pickup to the innermost position once (start-limit switch (pin 4 of CN503) develops "L".) and to the external direction at low speed (start-limit switch develops "H", turning off the switch.).
Does pulse of 1.65V ± 1.65V develop at pin 162 of IC502?
N
Check BUS between IC502 and IC601 and oscillation.
Y
Check feed gear.

Fig. 1-3-2

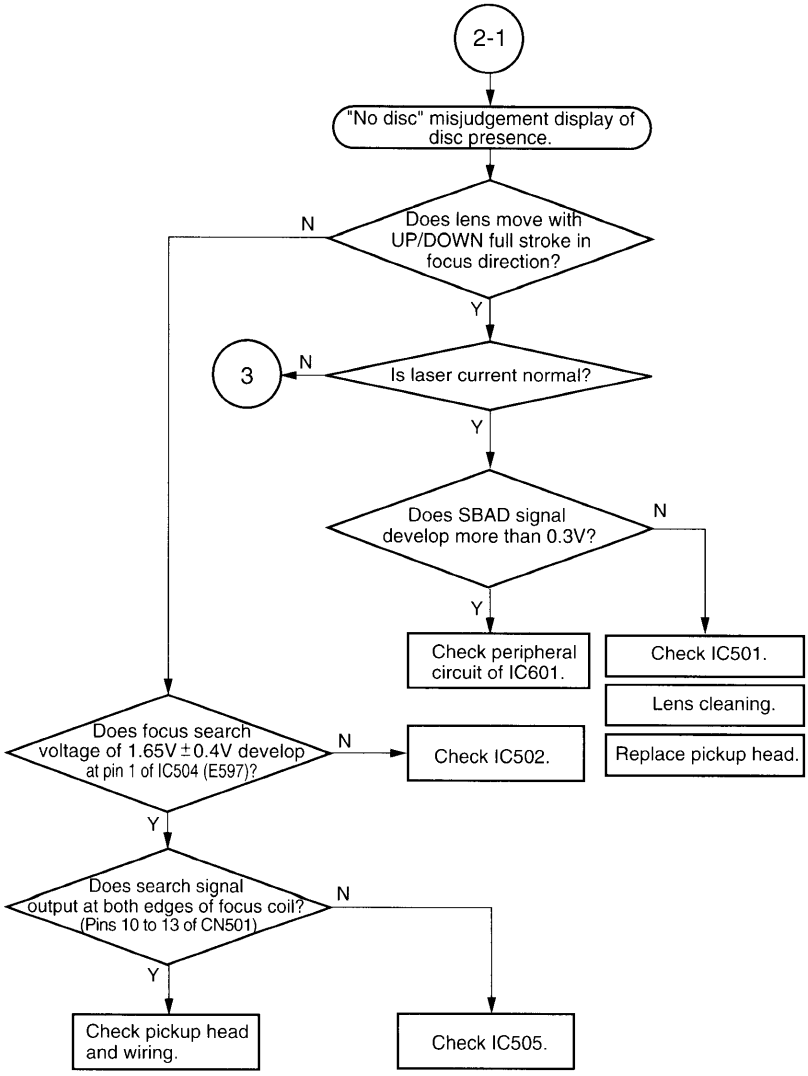


Fig. 1-3-3

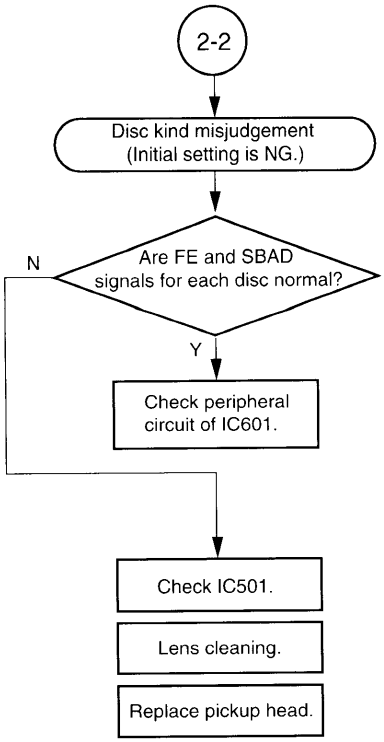


Fig. 1-3-4

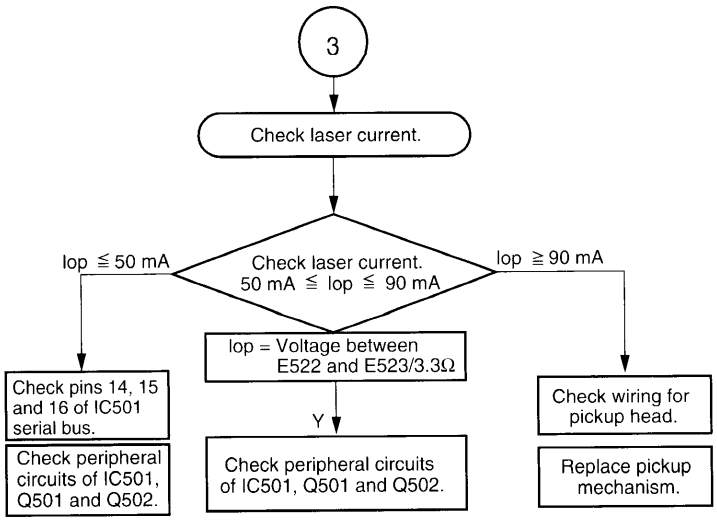


Fig. 1-3-5

DVD single (single-layer) disc detection waveform

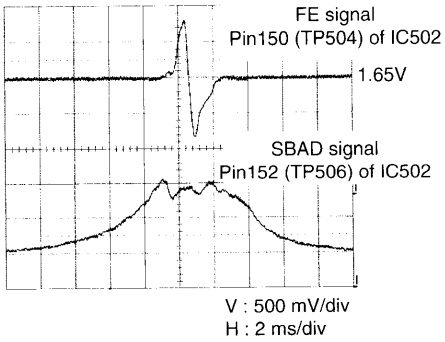


Fig. 1-3-6

DVD dual (dual-layer) disc detection waveform

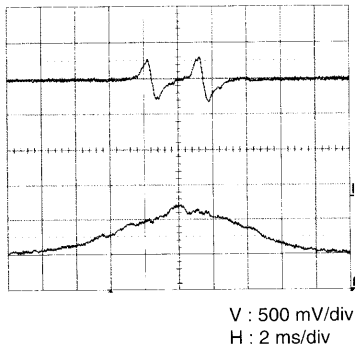


Fig. 1-3-7

CD disc detection waveform

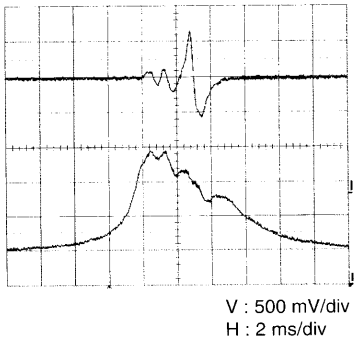


Fig. 1-3-8

(2) Picture appears (PLAY)

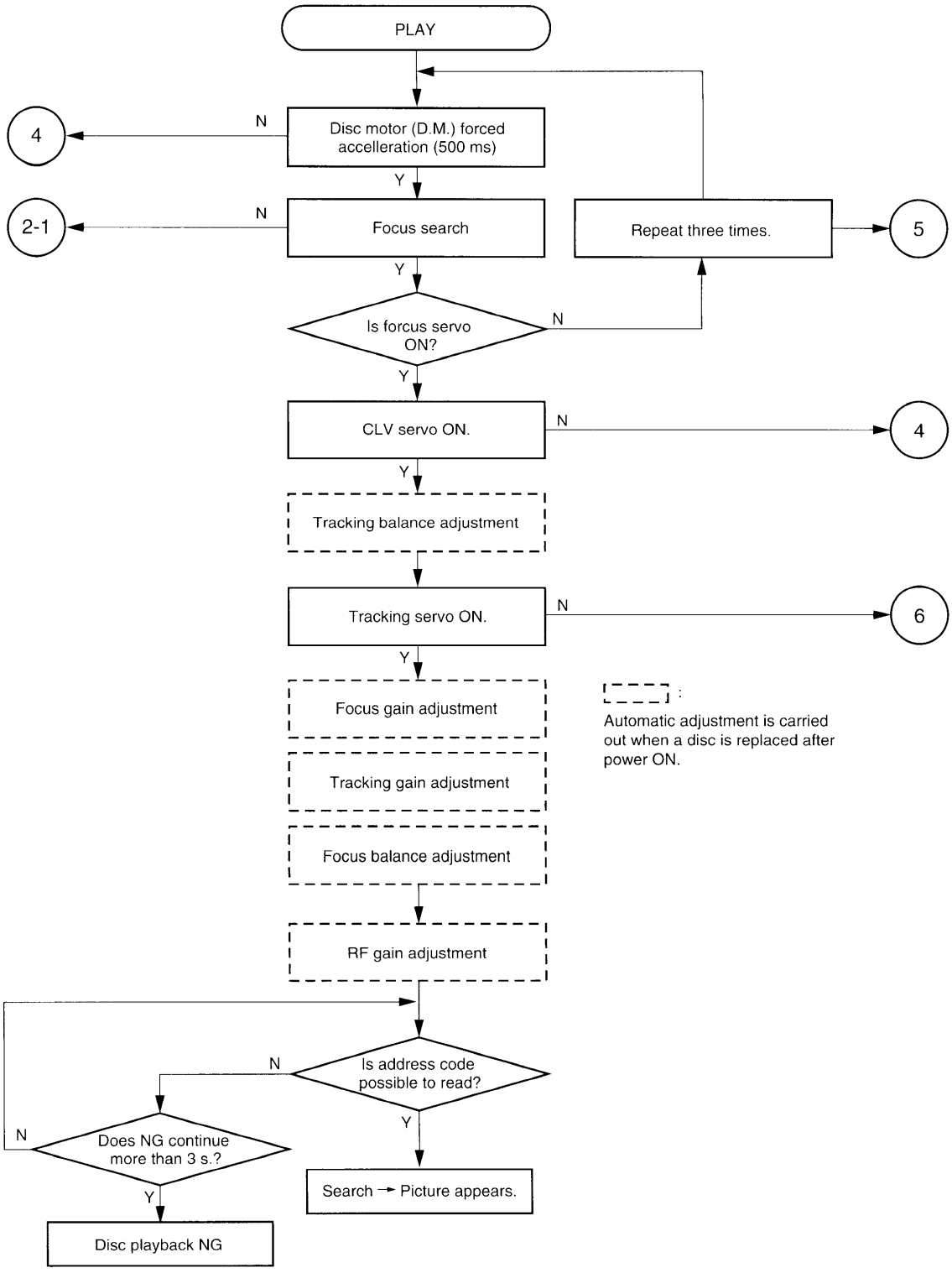


Fig. 1-3-9

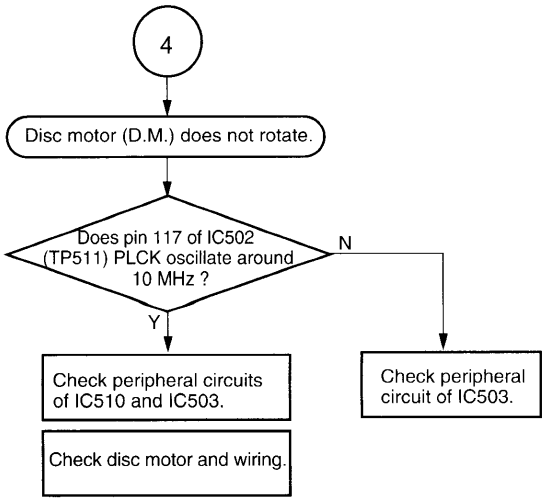

4
Disc motor (D.M.) does not rotate.
Does pin 117 of IC502 (TP511) PLCK oscillate around 10 MHz ?
N
Y
Check peripheral circuits of IC510 and IC503.
Check peripheral circuit of IC503.
Check disc motor and wiring.

Fig. 1-3-10

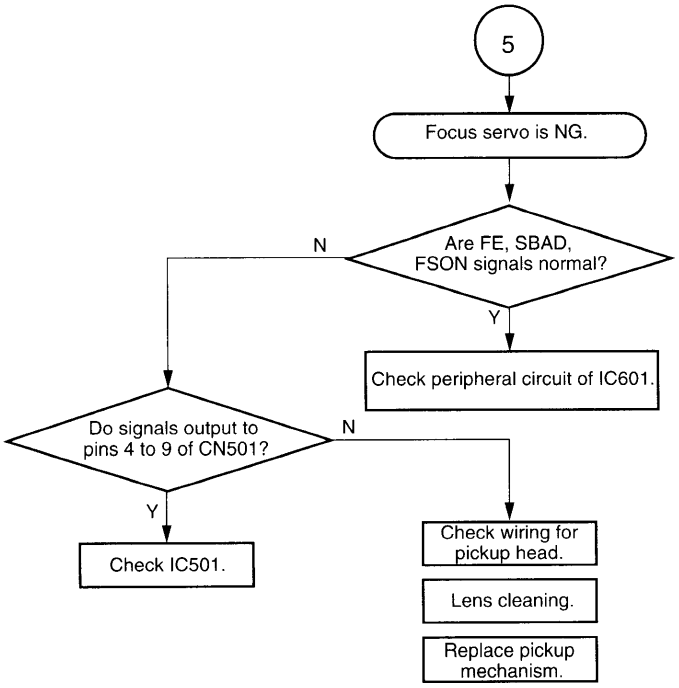


Fig. 1-3-11

Focus servo ON signal waveform

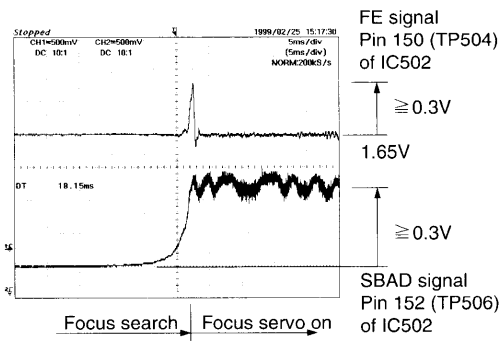


Fig. 1-3-12

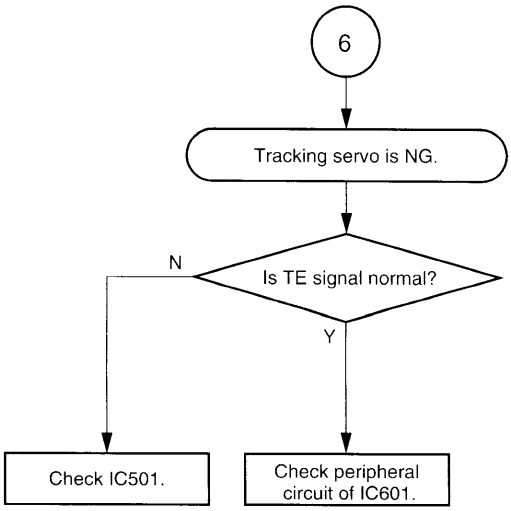
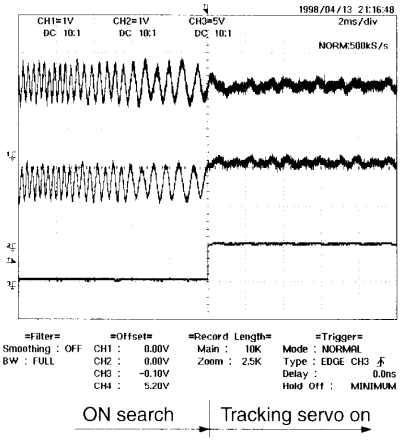


Fig. 1-3-13

Signal waveform at tracking servo ON (CD)


1998/04/13 21:16:48
CH1=1V DC 10:1
CH2=1V DC 10:1
CH3=5V DC 10:1
2ms/div
NORM:500kS/s
=Filter= =Offset= =Record Length= =Trigger=
Smoothing : OFF CH1 : 0.00V Main : 10K Mode : NORMAL
BW : FULL CH2 : 0.00V Zoom : 2.5K Type : EDGE CH3
CH3 : -0.10V Delay : 0.0ns
CH4 : 5.20V Hold Off : MINIMUM
ON search
Tracking servo on

TE signal
Pin 151 (TP503) of IC502
1.65V

RFRP signal
Pin 153 (TP501) of IC502

Search ON (SRCH)
Pin 38 (TP508) of IC502

Fig. 1-3-14

Signal waveform at tracking servo ON (DVD)

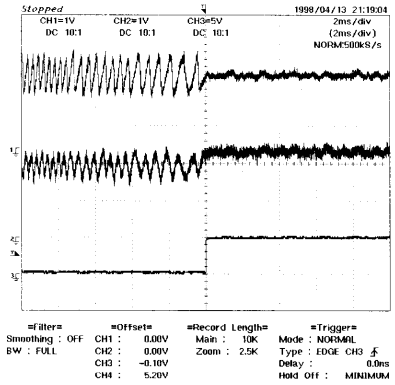

Stopped
1998/04/13 21:19:04
CH1=1V DC 10:1
CH2=1V DC 10:1
CH3=5V DC 10:1
2ms/div
(2ms/div)
NORM:500kS/s
=Filter= =Offset= =Record Length= =Trigger=
Smoothing : OFF CH1 : 0.00V Main : 10K Mode : NORMAL
BW : FULL CH2 : 0.00V Zoom : 2.5K Type : EDGE CH3
CH3 : -0.10V Delay : 0.0ns
CH4 : 5.20V Hold Off : MINIMUM

Fig. 1-3-15

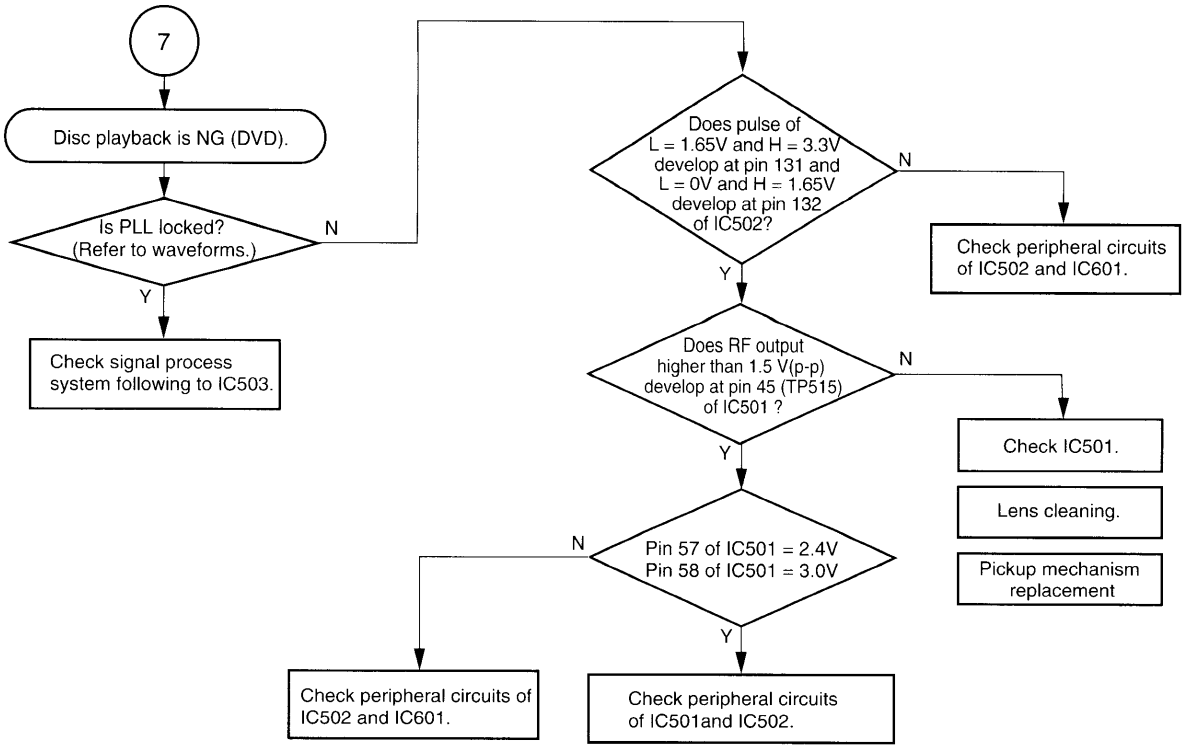
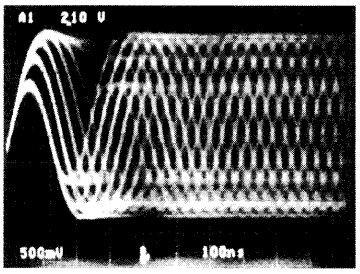


Fig. 1-3-16

PLL works as a servo loop to generate a clock signal for reading RF signal binary data. With the PLL locked, the eye pattern is identified clearly when triggered with the read clock PLCK.

DVD RF signal

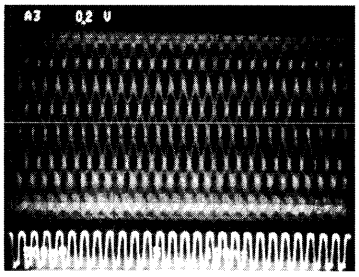


DVD RF signal
Pin 45 (TP515) of IC501

V : 500 mV/div
H : 50 ns/div

Fig. 1-3-17

DVD playback waveform



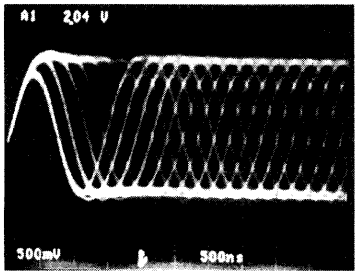
DVD RF signal
Pin 45 (TP515) of IC501

DVD PLCK
Pin 117 (TP511) of IC502

CH1 : TP515 DVDRF 500 mV/div
CH2 : TP511 DVDPLCK 5 V/div
50 ns/div

Fig. 1-3-19

CD RF signal

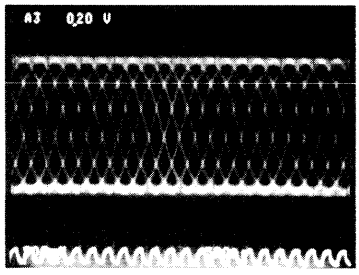


CD RF signal
Pin 45 (TP515) of IC501

V : 500 mV/div
H : 100 ns/div

Fig. 1-3-18

CD playback waveform



CD RF signal
Pin 45 (TP515) of IC501

CD PLCK
Pin 117 (TP511) of IC502

CH1 : TP515 CDRF 500 mV/div
CH2 : TP511 CDPLCK 5 V/div
100 ns/div

Fig. 1-3-20

3-1-2. Location Diagram of Servo Test Point

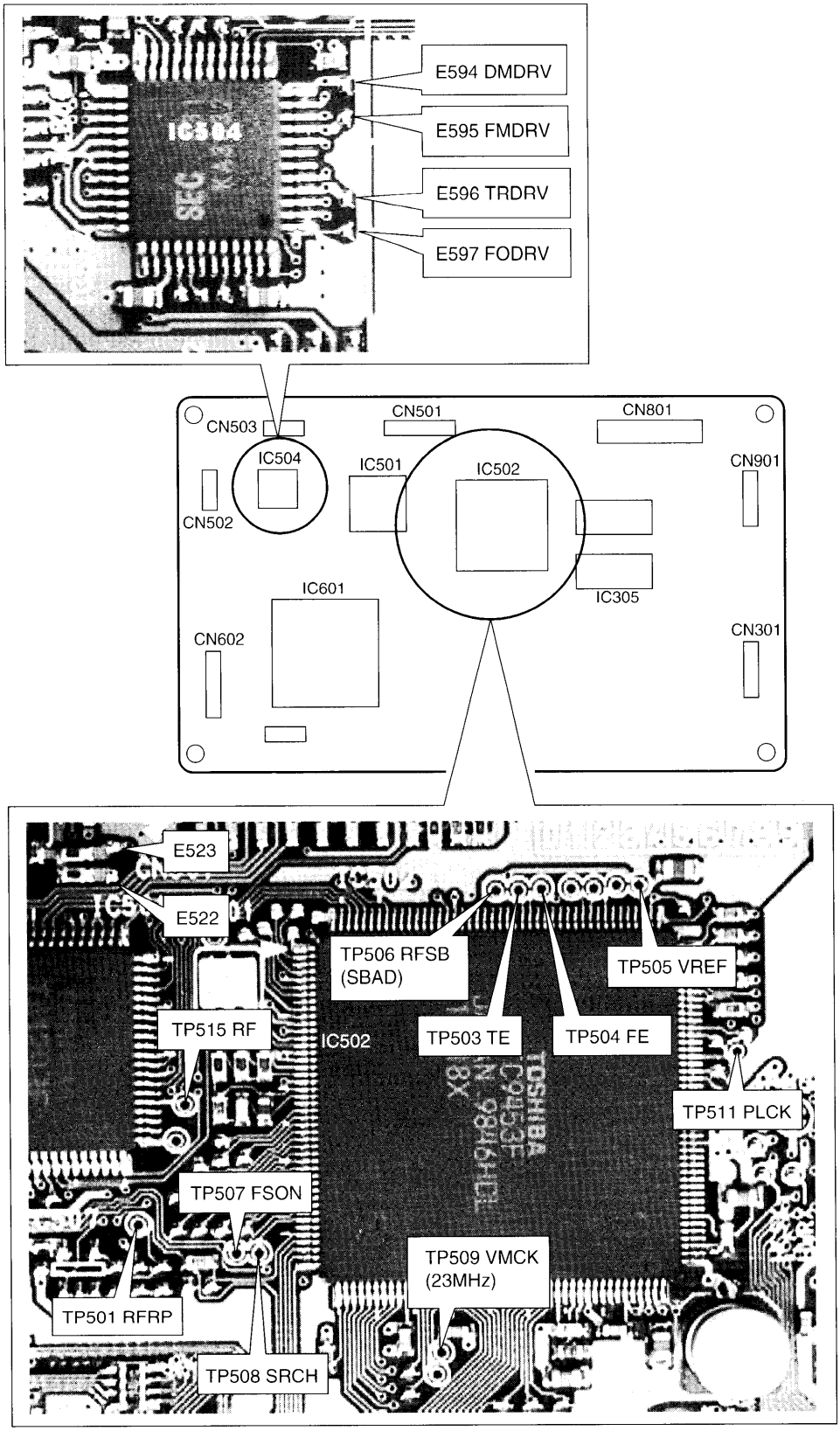


Fig. 1-3-21

SECTION 2
PART REPLACEMENT AND ADJUSTMENT PROCEDURES

CAUTIONS BEFORE STARTING SERVICING

Electronic parts are susceptible to static electricity and may easily damaged, so do not forget to take a proper grounding treatment as required.

Many screws are used inside the unit. To prevent missing, dropping, etc. of the screws, always use a magnetized screwdriver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded parts and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

1. REPLACEMENT OF MECHANICAL PARTS

1-1. Cabinet Replacement

1-1-1. Top Cover

1. Remove five screws (1) and remove the top cover (2).

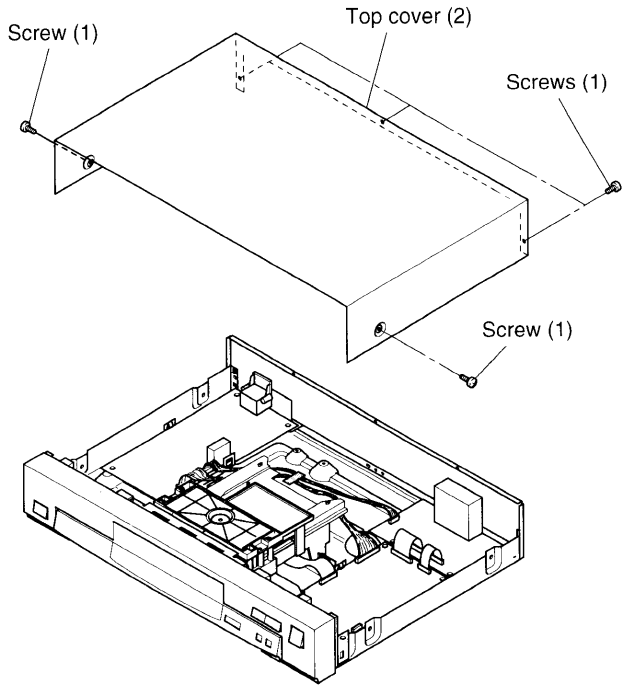


Fig. 2-1-1

1-1-2. Clamper Stay

<Removal>

1. Remove two screws (1).
2. Release two claws and remove the clamper stay (2).

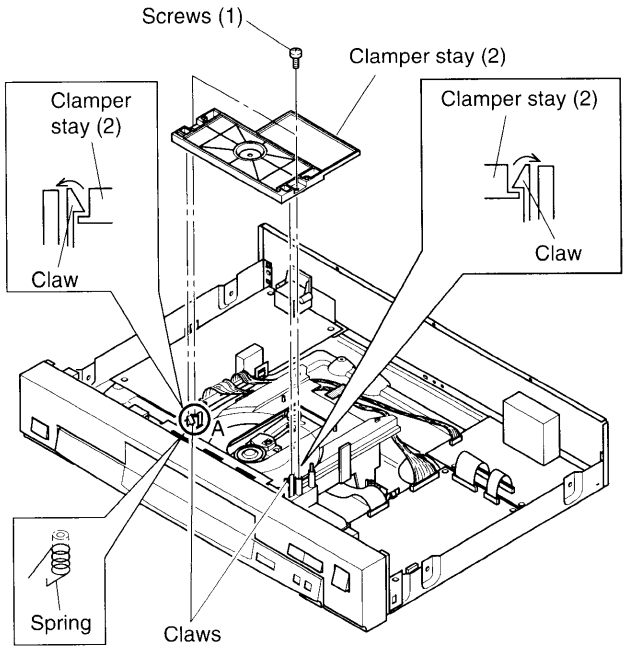


Fig. 2-1-2

<Mounting >

1. The spring for tray side pressure is inserted into the portion "A". (Refer to Fig. 2-1-2.)
2. By referring to Fig. 2-1-3, insert the spring normally and mount the clamper stay.

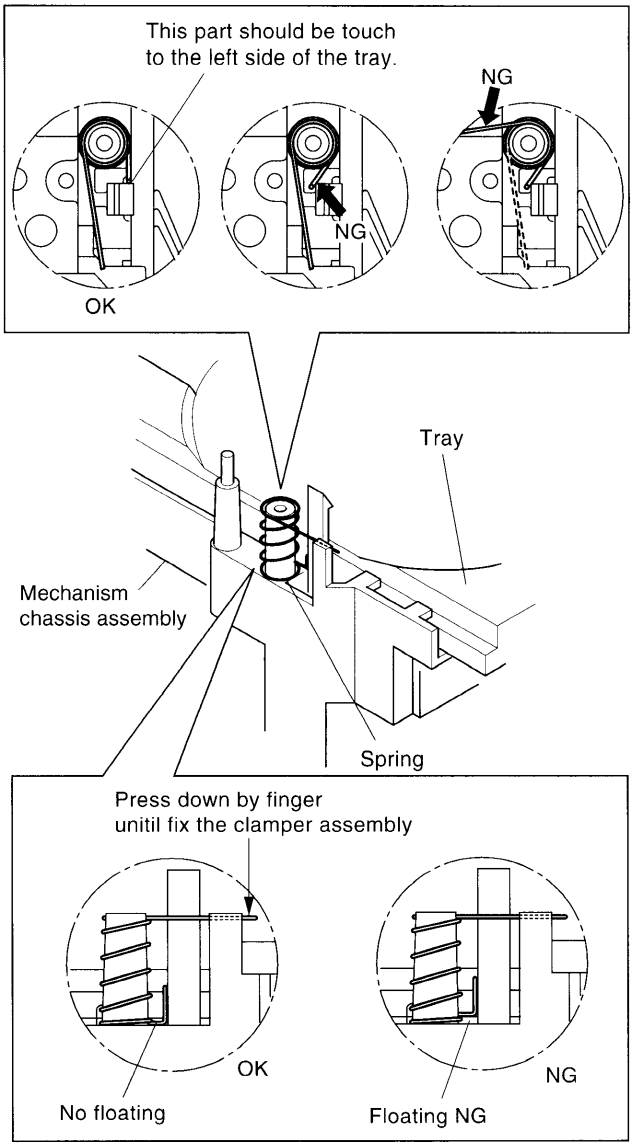


Fig. 2-1-3

1-1-3. Tray Panel

<Tray Ejection>

1. Slide the slider (2) of the mechanism chassis assembly (1) with a screwdriver, etc. in the arrow direction, so that the tray (3) is ejected.

Note:

- Take care not to damage the pickup and other parts.

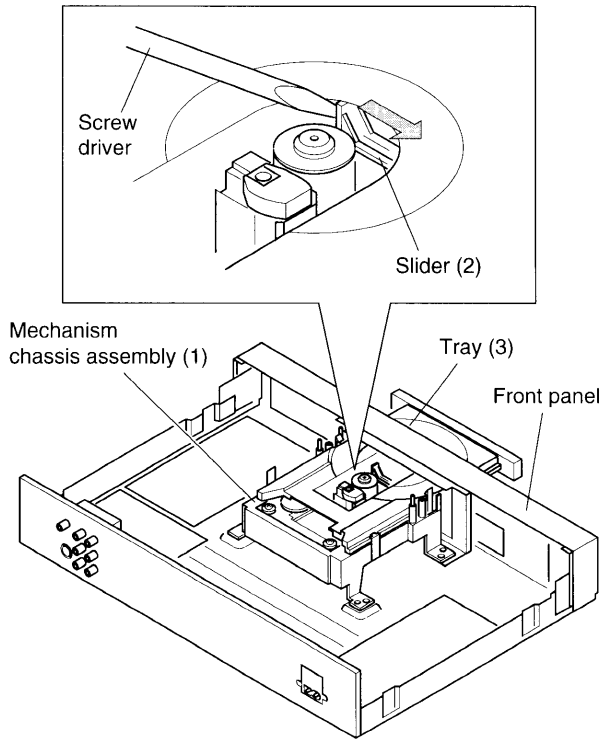


Fig. 2-1-4

<Tray Panel Removal>

1. Eject the tray (3).
2. Twist the tray panel (4) a little in the arrow A direction with the tray (3) hold by hand to release two claws and lift up the tray panel (4) in the arrow B direction, then the tray panel (4) is removed. (Refer to Fig. 2-1-5.)
3. When mounting the tray panel (4), insert the tray panel (4) along the grooves of the both sides of the tray (3) until clicking.

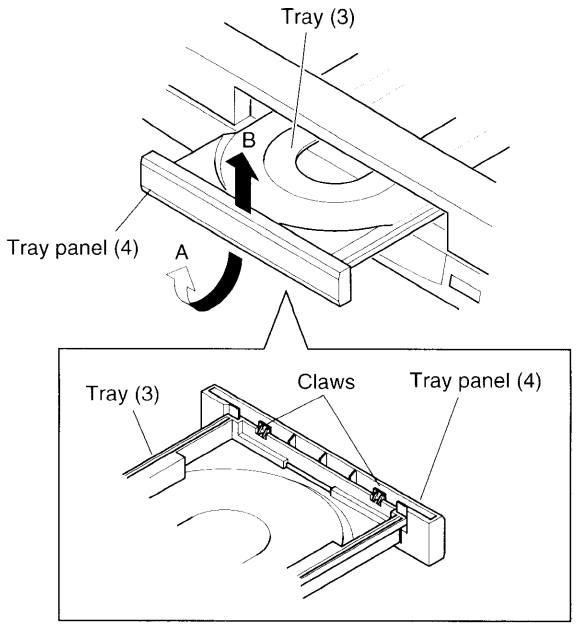


Fig. 2-1-5

1-1-4. Front Panel and Tray

1. Remove the flexible cable (1).
2. Release four claws and remove the front panel (2).
3. Pull out the tray (3) to this side.

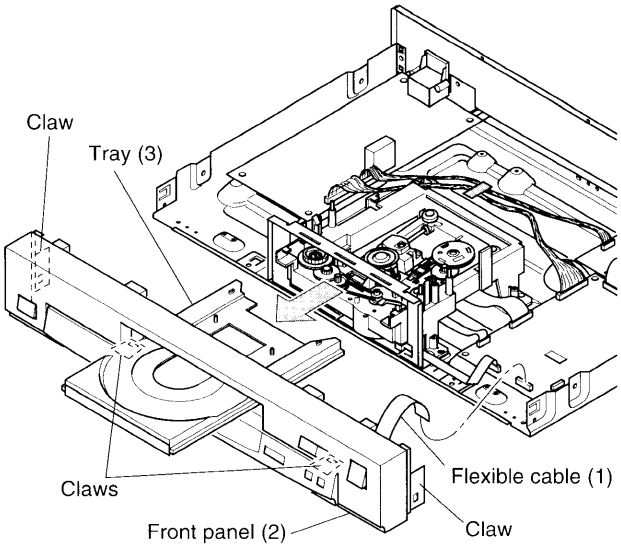


Fig. 2-1-6

Note:

- Insert the tray (3) with the front side of the pickup mechanism assembly descended. (The slider positions to the left side.)
- The gears are required to match their phases each other. After setting the gear (4) as shown in the figure "A", insert the tray (3). When inserting a tray (3), push the rack gear side shown by the arrow.
- After inserting the tray (3), confirm that the mark of the gear (4) matches with that of the rack gear on the tray (first tooth of the gear). (Refer to Fig. B.)

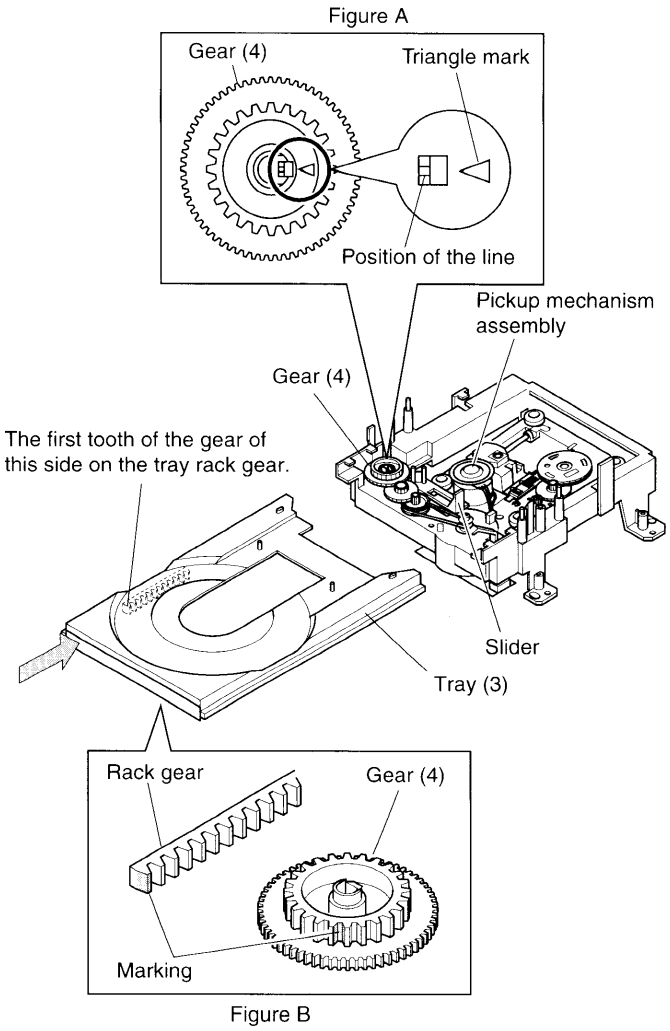


Fig. 2-1-7

1-1-5. Rear Panel

1. Remove three screws (1) and remove the rear panel (2).

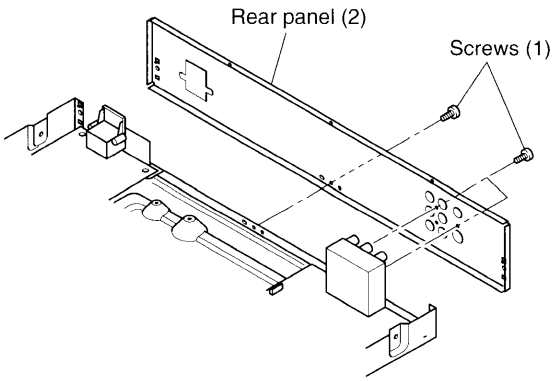


Fig. 2-1-8

1-2. PC Board Replacement

1-2-1. Main PC Board

Note:

- Before removing the main PC board (4), be sure to short-circuit the laser diode output land.

  After replacing, open the land as it was after inserting the flexible cables (1).

1. Remove the top cover. (Refer to item 1-1-1.)
2. Remove six flexible cables (1) and remove one connector (3).
3. Remove four screws (2).
4. Release two claws and remove the main PC board (4).

Note:

- When mounting, be sure to twist the wire for the connector (3) several times.

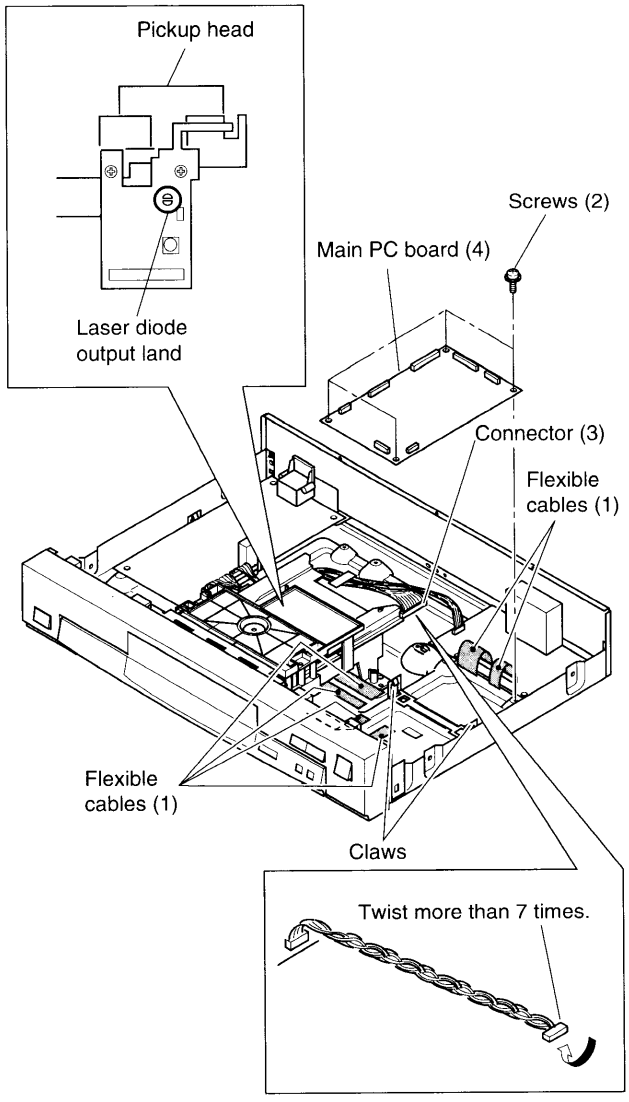


Fig. 2-1-9

1-2-2. Output PC Board

1. Peel off the tape (3).
2. Remove the connector (2).
3. Disconnect two flexible cables (1).
4. Remove two screws (4).
5. Remove two screws (5) and remove the output PC board (6).

Note:

- When mounting, be sure to twist the wire for the connector (2) several times.

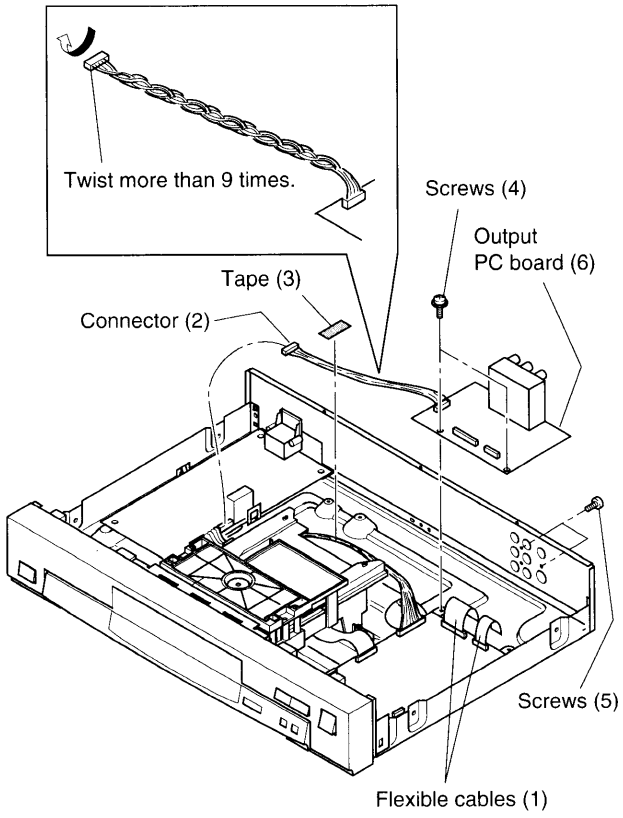


Fig. 2-1-10

1-2-3. Power PC board

1. Peel off the tape (1).
2. Remove the connectors (2) and (3).
3. Remove three screws (4).
4. Remove two screws (5).
5. Release two claws and remove the power supply PC board (6).

Note:

- When mounting, be sure to twist the wire for the connectors (2) and (3) several times.

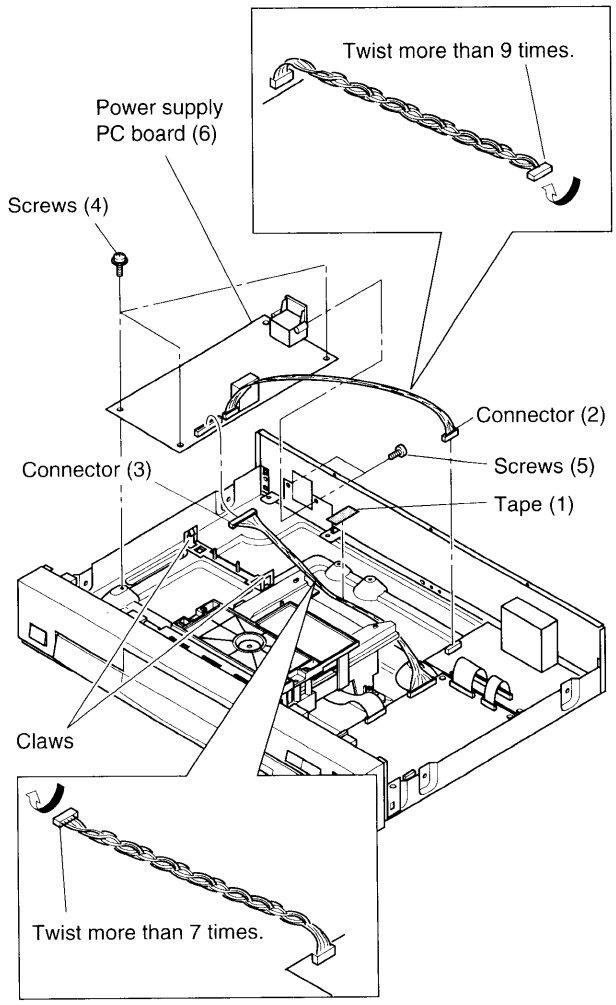


Fig. 2-1-11

1-2-4. Front PC Board

1. Remove the front panel. (Refer to item 1-1-4.)
2. Remove four screws (1) and remove the front display PC board (2)
3. Remove two screws (3) and remove the power switch PC board (4).

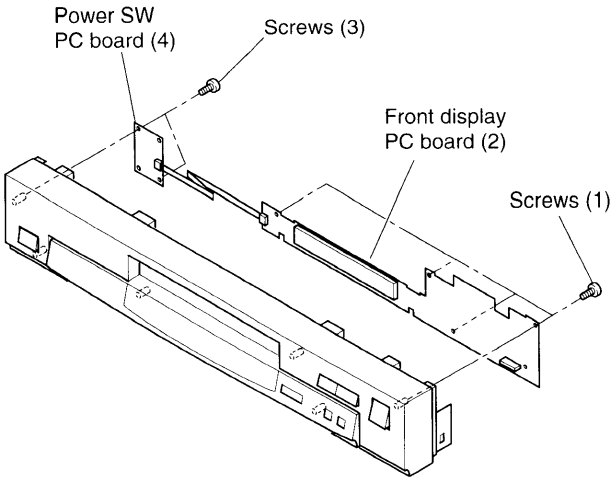


Fig. 2-1-12

1-3. Mechanism Parts

1-3-1. Mechanism Chassis Assembly

Note:

- When removing the mechanism chassis assembly (3), be sure to short-circuit the laser diode output land before removing the connector and the flexible cables.

  After replacing, open the land as it was after inserting the connector and flexible cables.

1. Remove the tray. (Refer to items 1-1-3 and 1-1-4.)
2. Remove three flexible cables (1).
3. Remove four screws (2) and remove the mechanism chassis assembly (3).

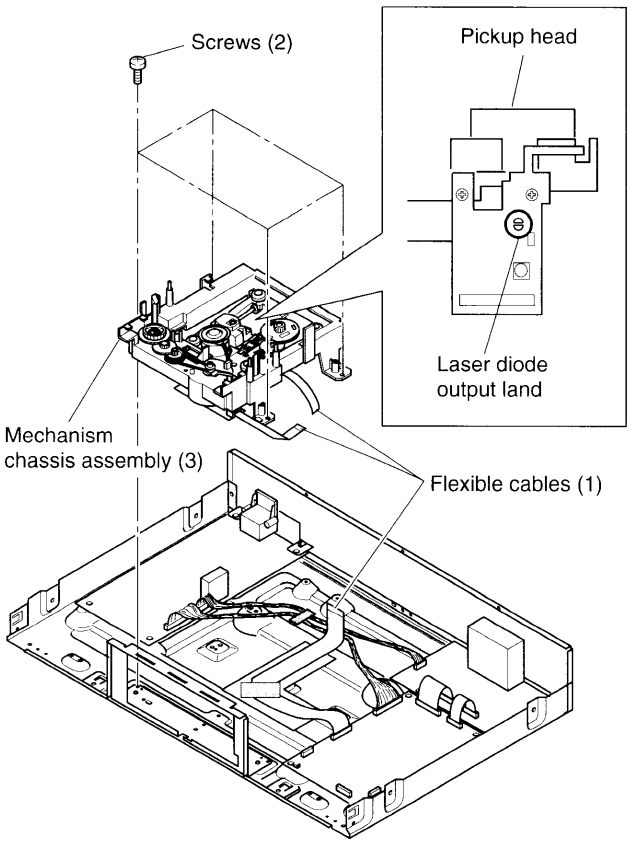


Fig. 2-1-13

1-3-2. Loading Belt

1. Remove the gear (1) by releasing the claw.
2. Remove the gear (2).
3. Remove the gear (3) and the loading belt (4).
4. Replace the loading belt (4) with a new one.
5. When mounting, perform the reverse order of the removal.

Note:

- When mounting the loading belt (4), twisting and attaching of a grease, etc. are not allowed.

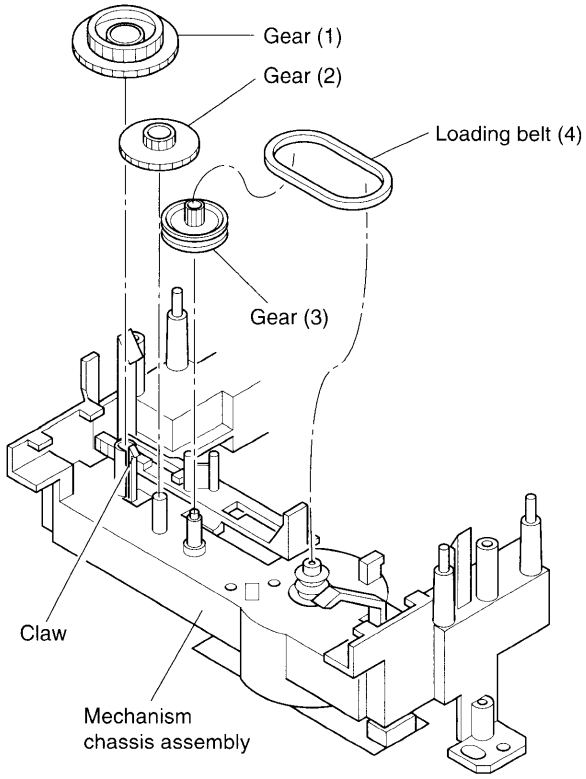


Fig. 2-1-14

1-3-3. Loading Motor

1. Remove the loading belt. (Refer to item 1-3-2.)
2. Remove two screws (1) and two claws. Then remove the loading motor (2) (with the loading motor PC board (3) attached).
3. Desolder the terminal section of the loading motor (2) and remove the loading motor PC board (3).
4. Replace the loading motor (2) with a new one.
5. When mounting, perform the reverse order of the removal.

Note:

- When replacing the loading motor, meet the polarity phase of the terminals. (Mount the motor with the label positioned as shown in Fig. 2-1-15.)

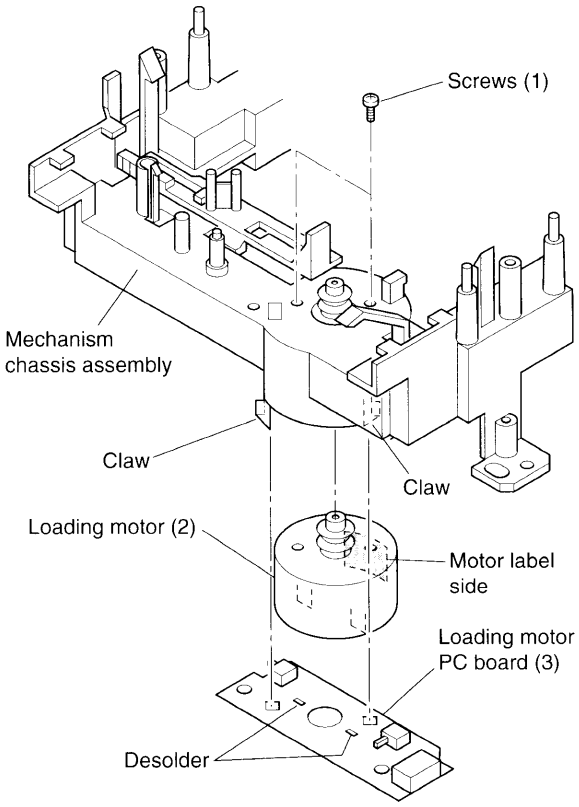


Fig. 2-1-15

1-3-4. Sub Chassis (with a pickup mechanism)

1. Turn the mechanism chassis assembly (1) upside down.
2. Remove one screw (2) and release the boss "A" from the claw. Then remove the sub chassis (3) (with the pickup mechanism) by sliding in the arrow direction.
3. When mounting, perform the reverse order of the removal.

Note:

- When mounting the sub chassis (3) (with the pickup mechanism), first, insert the boss "C" along the groove of the cam slider up/down cam (4) and next, the boss "B" and "A".
- The boss "A" and "B" may be used with washers. (One or two washers are used to prevent from the slust rattling. In some cases, no washer is used.)

  When the washer(s) is used, be sure to assemble as it was without losing.

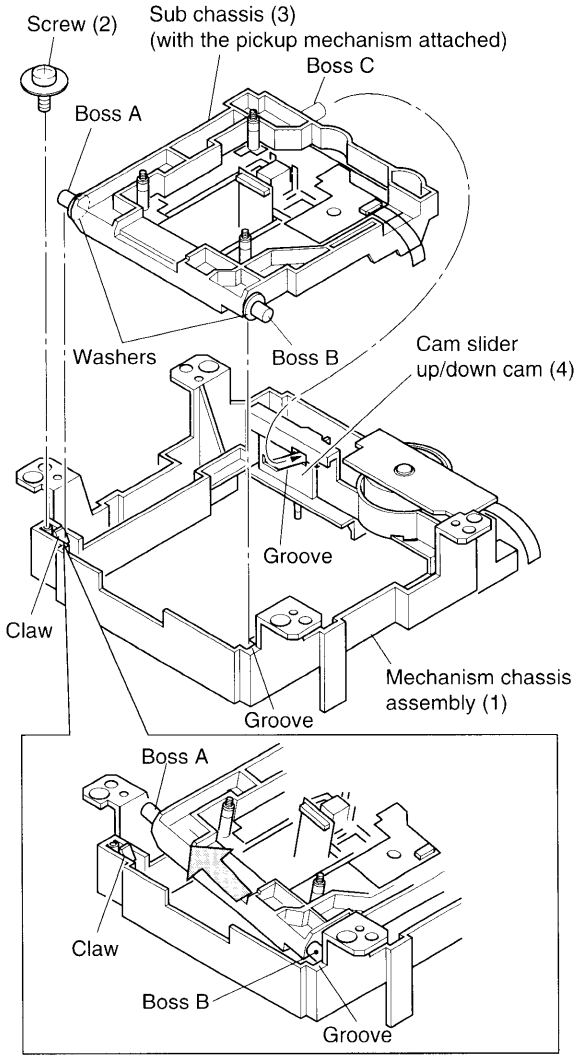


Fig. 2-1-16

1-3-5. Pickup Mechanism Assembly

<Removal>

1. Remove four screws (1) and four washers (2) and then remove the pickup mechanism assembly (3).

<Mounting>

1. Replace the pickup mechanism assembly (3) with a new one.
2. When mounting, perform the reverse order of the removal.

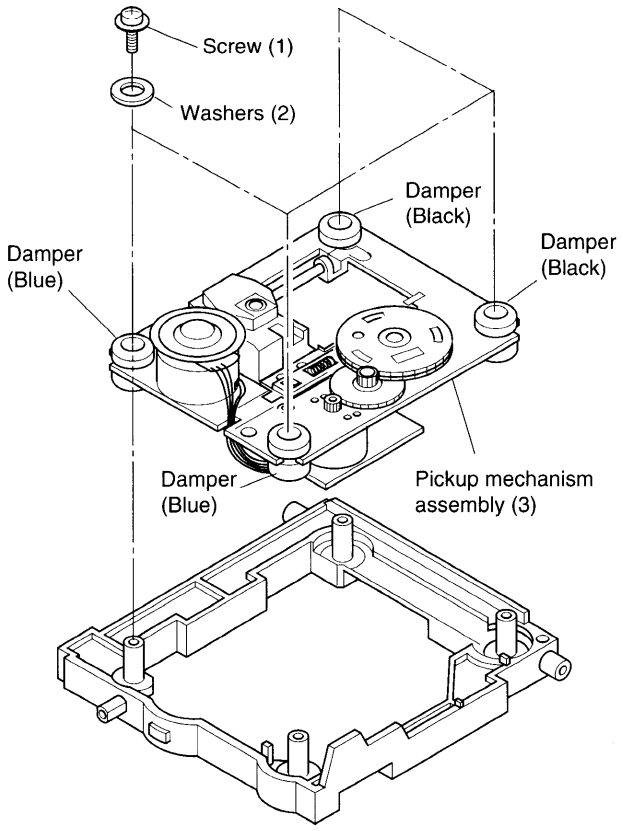


Fig. 2-1-17

Note:

- The dampers' color differs when used for the front side and the rear.
- When mounting the pickup mechanism assembly (2) with the screws (1), push the pickup mechanism assembly (2) downward without being caught and tighten the screws (1) after placing the washer with the damper bent.

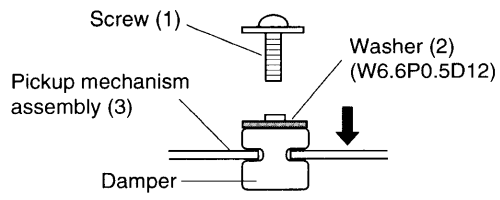


Fig. 2-1-18

1-3-6. Gear B Assembly, Gear A and Rack Gear Assembly

<Removal>

1. Release one claw and remove the gear B assembly (1).
2. Remove the gear A (2).
3. Remove one screw (3) and remove the rack gear assembly (4).

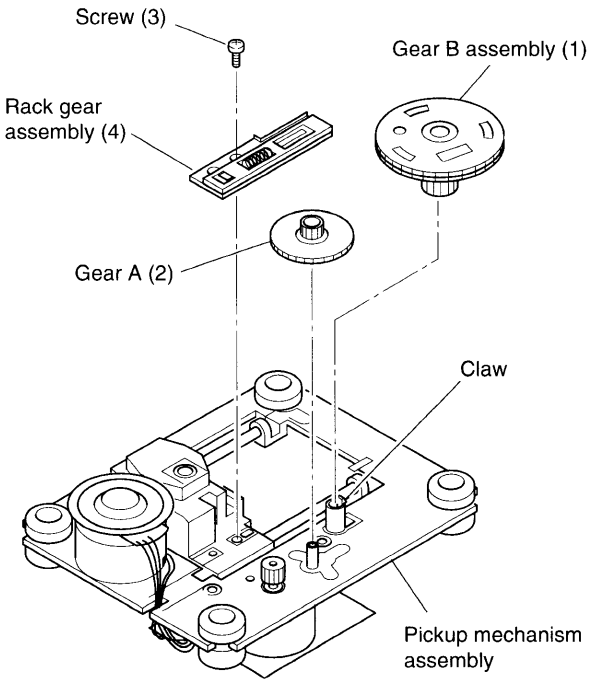


Fig. 2-1-19

<Mounting>

1. When mounting, perform the reverse order of the removal.
2. Mount the gear B assembly (1) by pushing the pickup head (5) to the disc motor side (arrow A direction) and shifting the upper gear of the rack gear assembly (4) in the arrow B direction. (Refer to Fig. 2-1-20.)
3. Fit the positioning holes on the upper gear and lower gear of the gear B assembly (1) and mount on the pickup mechanism assembly with the phase matched.

   At this time, note that the phase of the gear B assembly (1) and the gear A (2) shows the status in the Fig. 2-1-21.

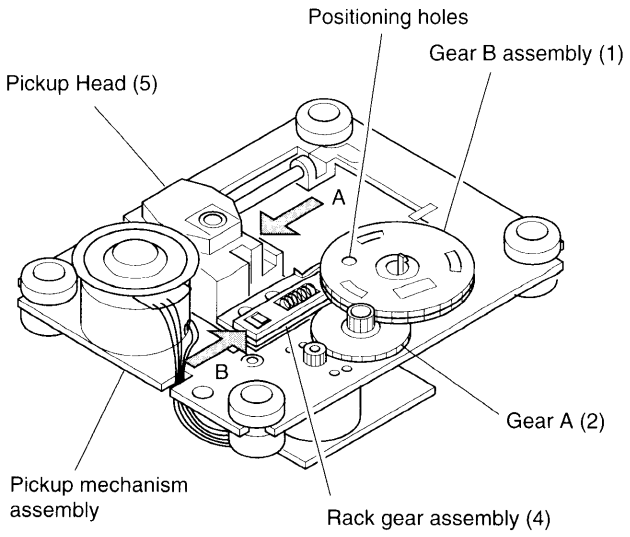


Fig. 2-1-20

Note:

- Mount the gear B assembly (1) and the gear A (2) with their gear teeth placed more than one tooth at least inside the shaded portion.

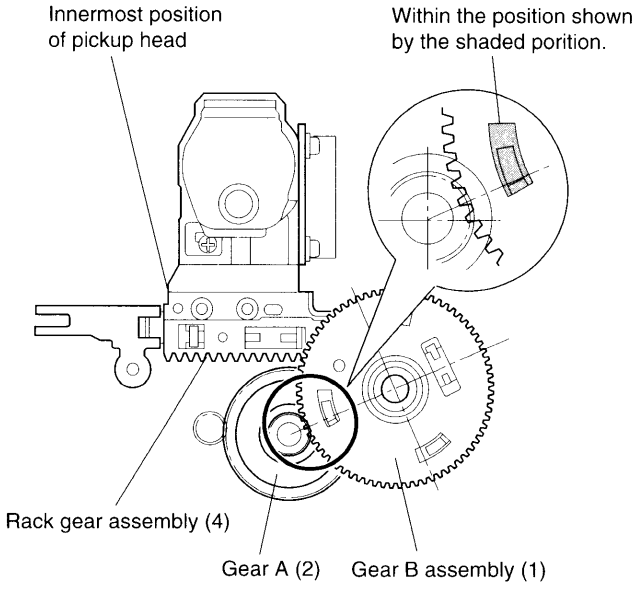

Innermost position of pickup head
Within the position shown by the shaded porition.
Rack gear assembly (4)
Gear A (2)
Gear B assembly (1)

Fig. 2-1-21

1-3-7. Feed Motor

<Removal>

1. Remove the gear B assembly (1) and the gear A (2). (Refer to item 1-3-6.)
2. Remove two screws (1) and remove the feed motor (2) (with the feed motor PC board (3) attached). (Refer to Fig. 2-1-22.)
3. Desolder the terminals of the feed motor (2) and remove the feed motor PC board (3).

<Mounting>

1. Tighten the feed motor (2) on the pickup mechanism assembly with two screws (1).
2. Insert the feed motor PC board (3) with the positioning pin on the chassis matched and solder the terminals.
3. Perform the reverse order of the removal.

Note:

- After mounting, put the lead wires through the notch of the pickup mechanism assembly.
- When replacing the loading motor, meet the polarity phase of the terminals. (Mount the motor with the label positioned as shown in Fig. 2-1-22.)

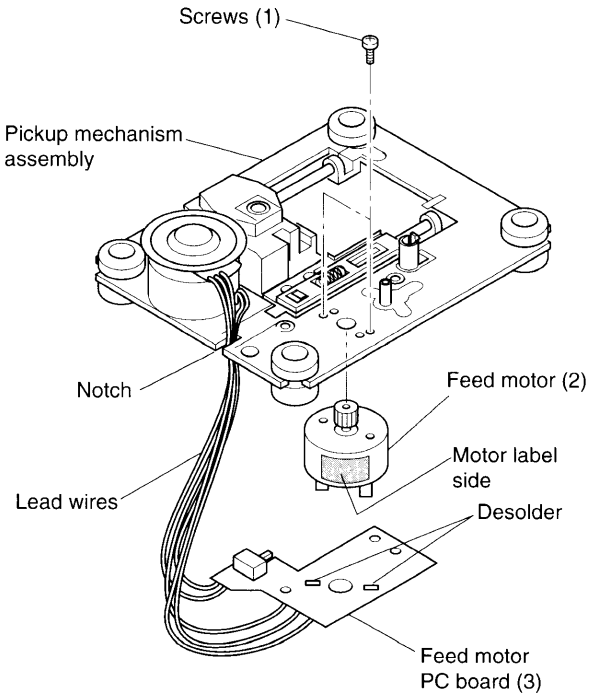


Fig. 2-1-22

SECTION 3
SERVICING DIAGRAMS

1. STANDING PC BOARDS FOR SERVICING

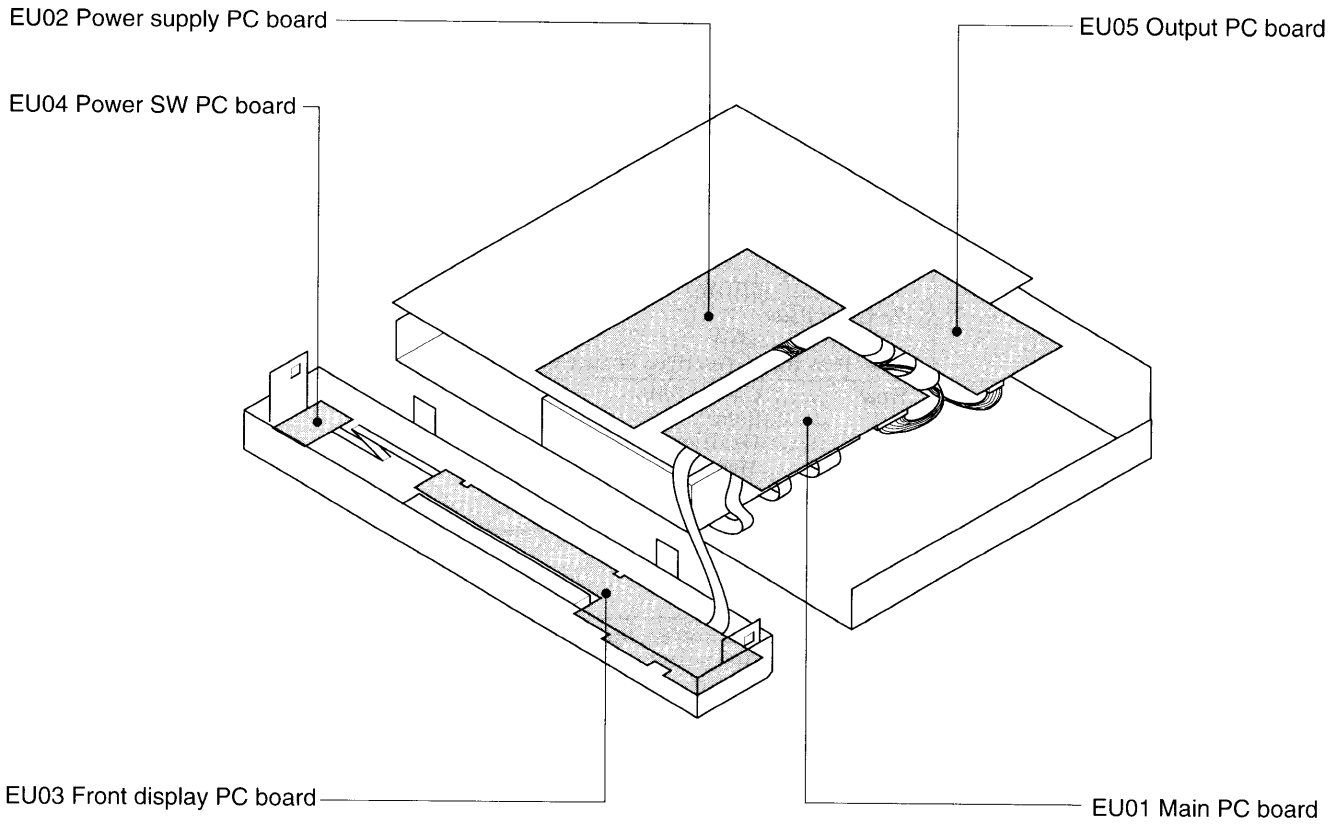


Fig. 3-1-1

2. CIRCUIT SYMBOLS AND SUPPLEMENTARY EXPLANATION

2-1. Precautions for Part Replacement

- In the schematic diagram, parts marked ⚠ (ex. ⚠ F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire etc.

2-2. Solid Resistor Indication

Unit	None .....Ω K .....kΩ M .....MΩ
Tolerance	None .....±5% B .....±0.1% C .....±0.25% D .....±0.5% F .....±1% G .....±2% K .....±10% M .....±20%
Rated Wattage	(1) Chip Parts None ..... 1/16W (2) Other Parts None ..... 1/6W Other than above, described in the Circuit Diagram.
Type	None .....Carbon film S .....Solid R .....Oxide metal film W .....Metal film W .....Cement FR .....Fusible

Eg. 1

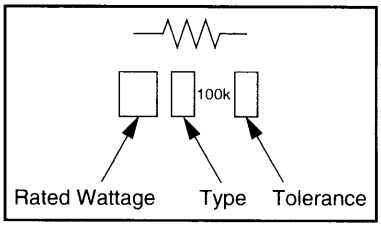


FIg. 3-2-1

2-3. Capacitance Indication

Symbol	.....Electrolytic, Special electrolytic NP .....Non polarity electrolytic .....Ceramic, plastic M .....Film .....Trimmer
Unit	None .....F μ .....μF p .....pF
Rated voltage	None .....50V For other than 50V and electrolytic capacitors, described in the Circuit Diagram.
Tolerance	(1) Ceramic, plastic, and film capacitors of which capacitance are more than 10 pF. None .....±5% or more B .....±0.1% C .....±0.25% D .....±0.5% F .....±1% G .....±2% (2) Ceramic, plastic, and film capacitors of which capacitance are 10 pF or less. None .....more than ±5% pF B .....±0.1 pF C .....±0.25 pF (3) Electrolytic, Trimmer Tolerance is not described.
Temperature characteristic (Ceramic capacitor)	None .....SL For others, temperature characteristics are described. (For capacitors of 0.01 μF and no indications are described as F.)
Static electricity capacity (Ceramic capacitor)	Sometimes described with abbreviated letters as shown in Eg. 3.

Eg. 2

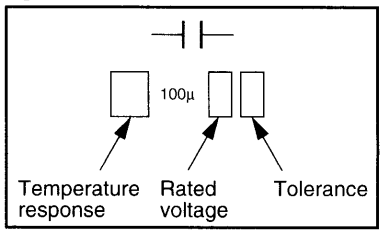


Fig. 3-2-2

Eg. 3

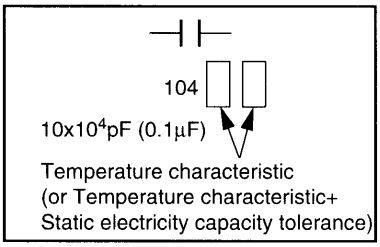


Fig. 3-2-3

2-4. Inductor Indication

Unit	None	..... H
	μ	..... μH
	m	..... mH
Tolerance	None	..... ±5%
	B	..... ±0.1%
	C	..... ±0.25%
	D	..... ±0.5%
	F	..... ±1%
	G	..... ±2%
	K	..... ±10%
	M	..... ±20%

Eg. 4

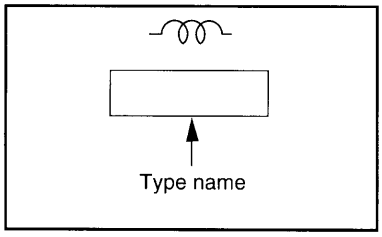


Fig. 3-2-4

2-5. Waveform and Voltage Measurement

- The waveforms for CD/DVD and RF shown in the circuit diagrams are obtained when a test disc is played back.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

Eg. 5

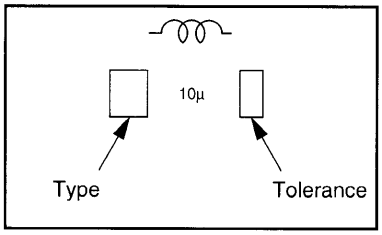


Fig. 3-2-5

2-6. When Replaced ROM ICs or Upgraded Firmware

1. When replaced the following ROM ICs, it is necessary to write the data into the new ICs.
   1) IC615 (firmware)
   2) IC613 (Setup default data and other information)
2. When the firmware is upgraded, rewriting the new firmware into IC615 may be requested for servicing.
3. Connect a computer to the main PC board of the DVD video player with using DATA UPDATE KIT (P/No. 79080074). (Fig. 3-2-6)
4. Writing operation

   Refer to the instruction attached to the data floppy disc.

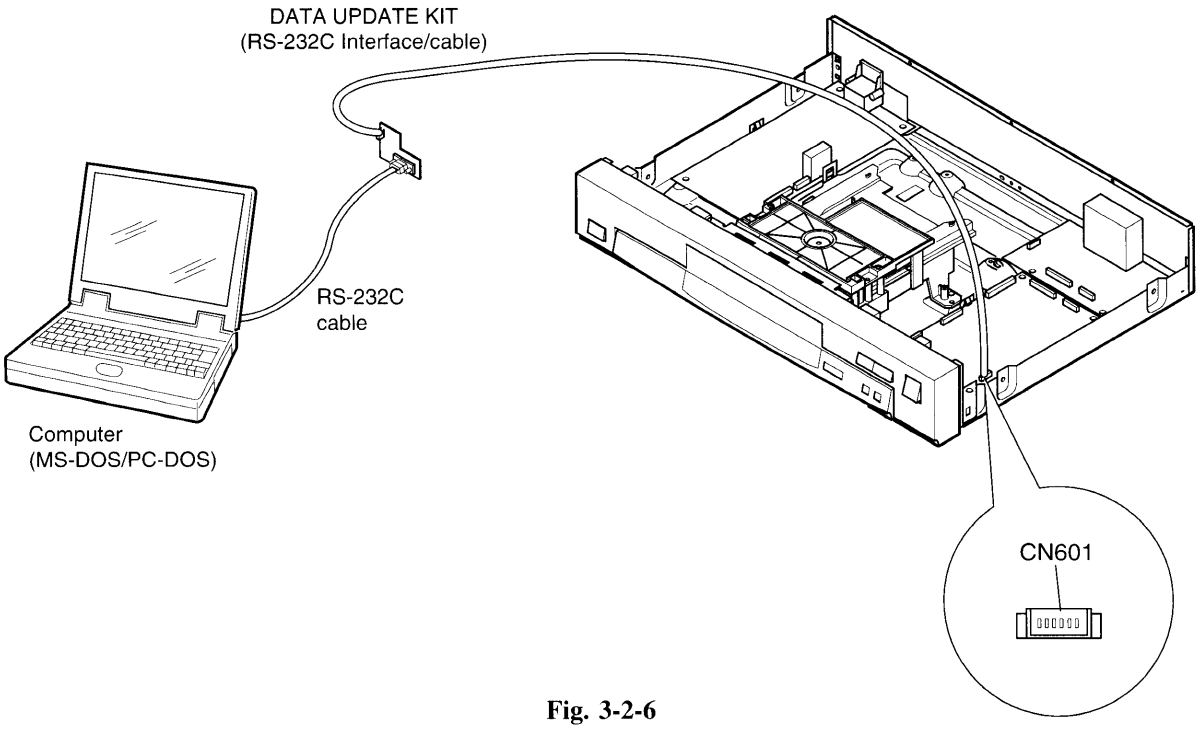


Fig. 3-2-6

Note:

- The firmware and setup data floppy discs are not available as service parts.
  For more information, consult TOSHIBA service office in your area.

3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

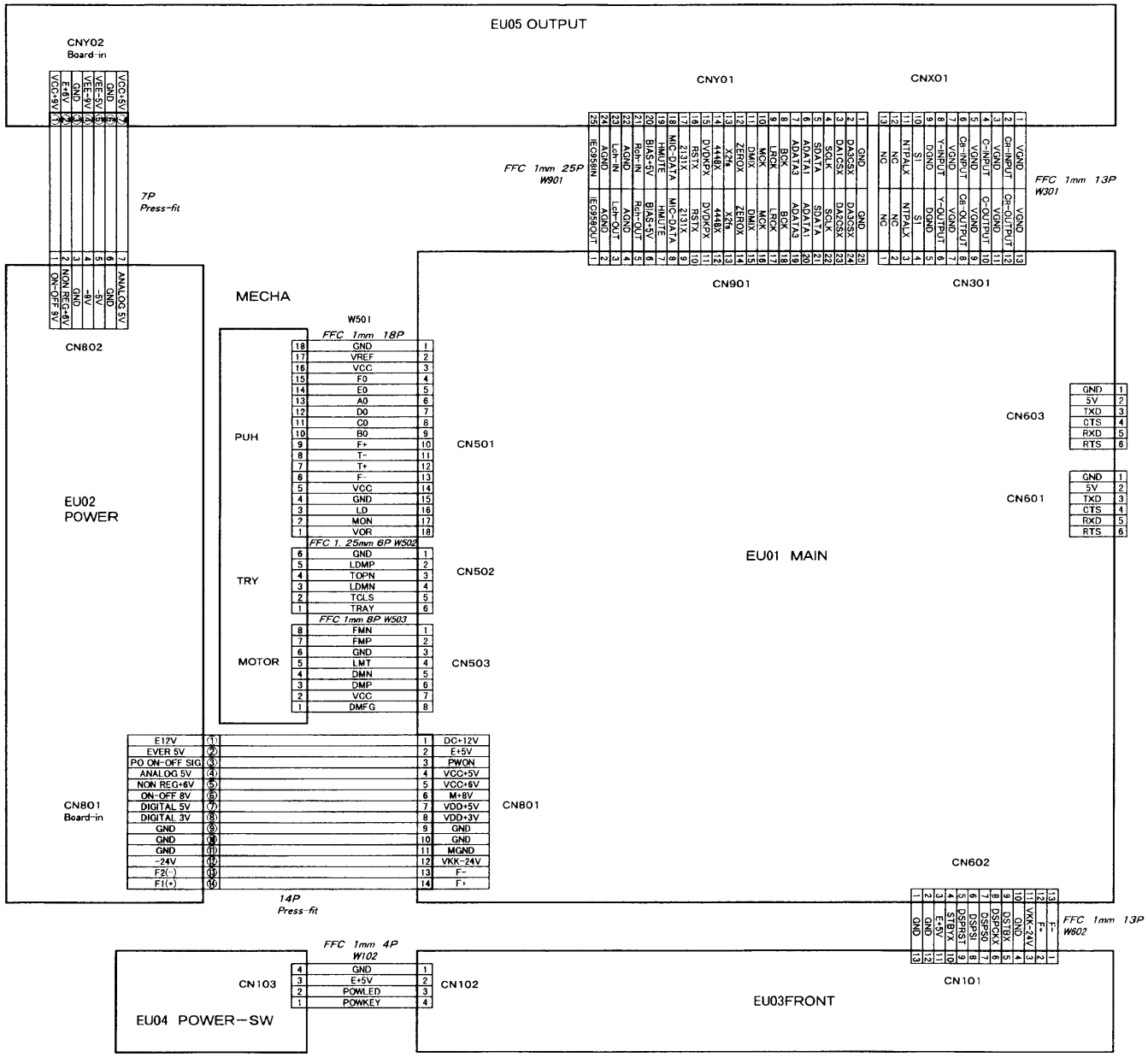
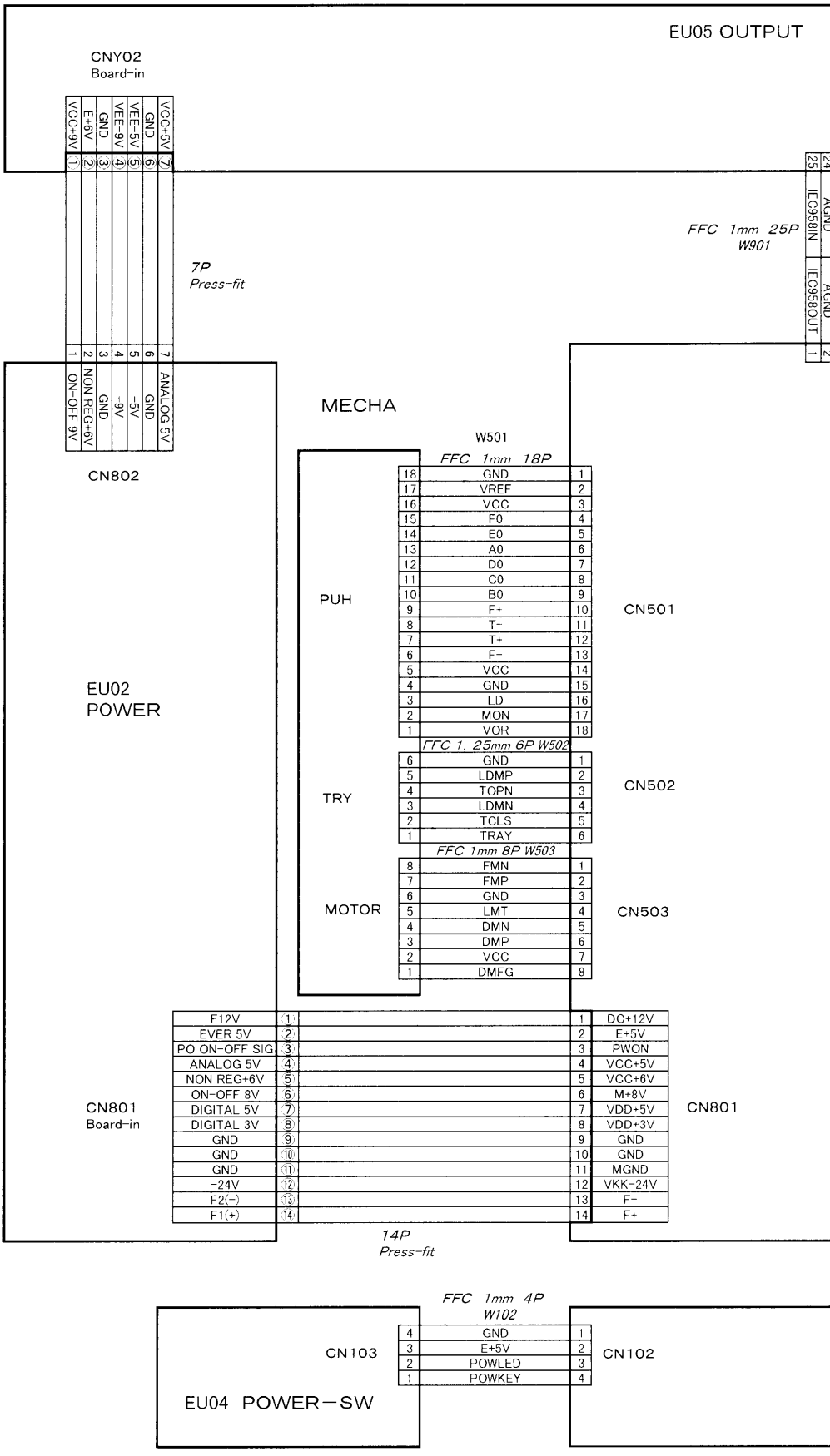


Fig. 3-3-1

3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM



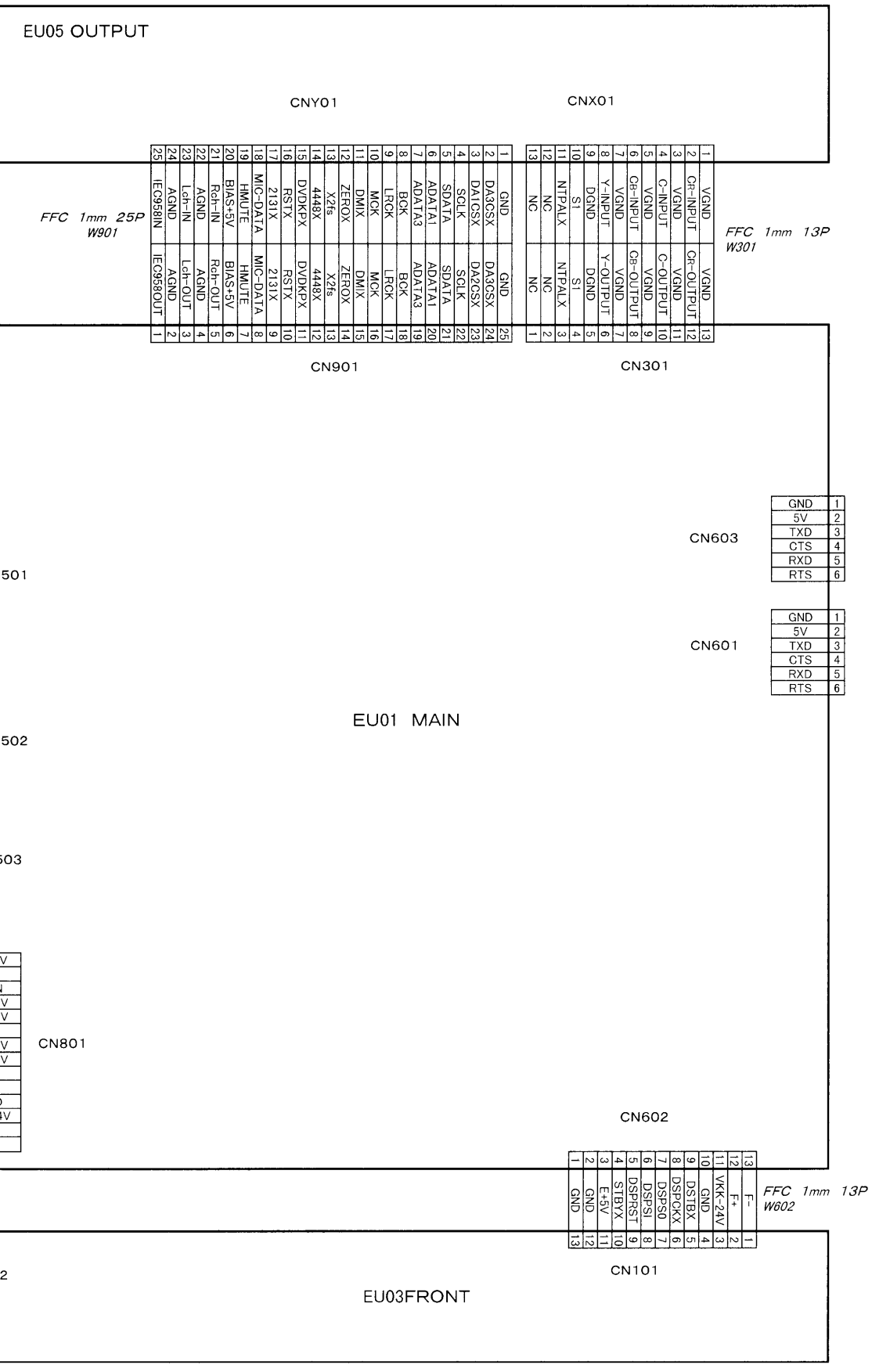

EU05 OUTPUT
CNY01
CNX01
FFC 1mm 25P
W901
FFC 1mm 13P
W301
CN901
CN301
CN603
CN601
EU01 MAIN
CN801
CN602
FFC 1mm 13P
W602
CN101
EU03FRONT

Fig. 3-3-1

4. BLOCK DIAGRAMS

4-1. Overall Block Diagram

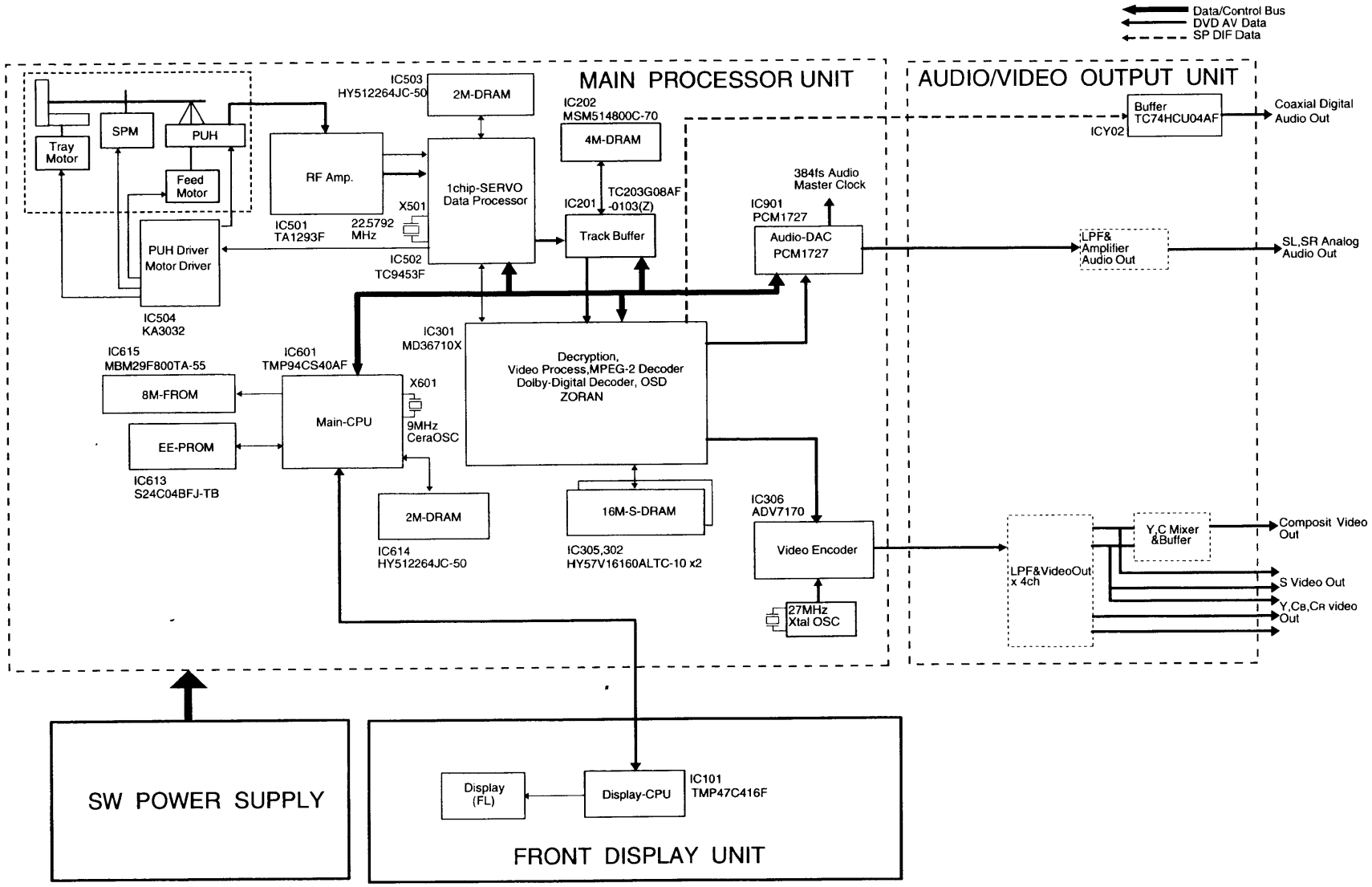
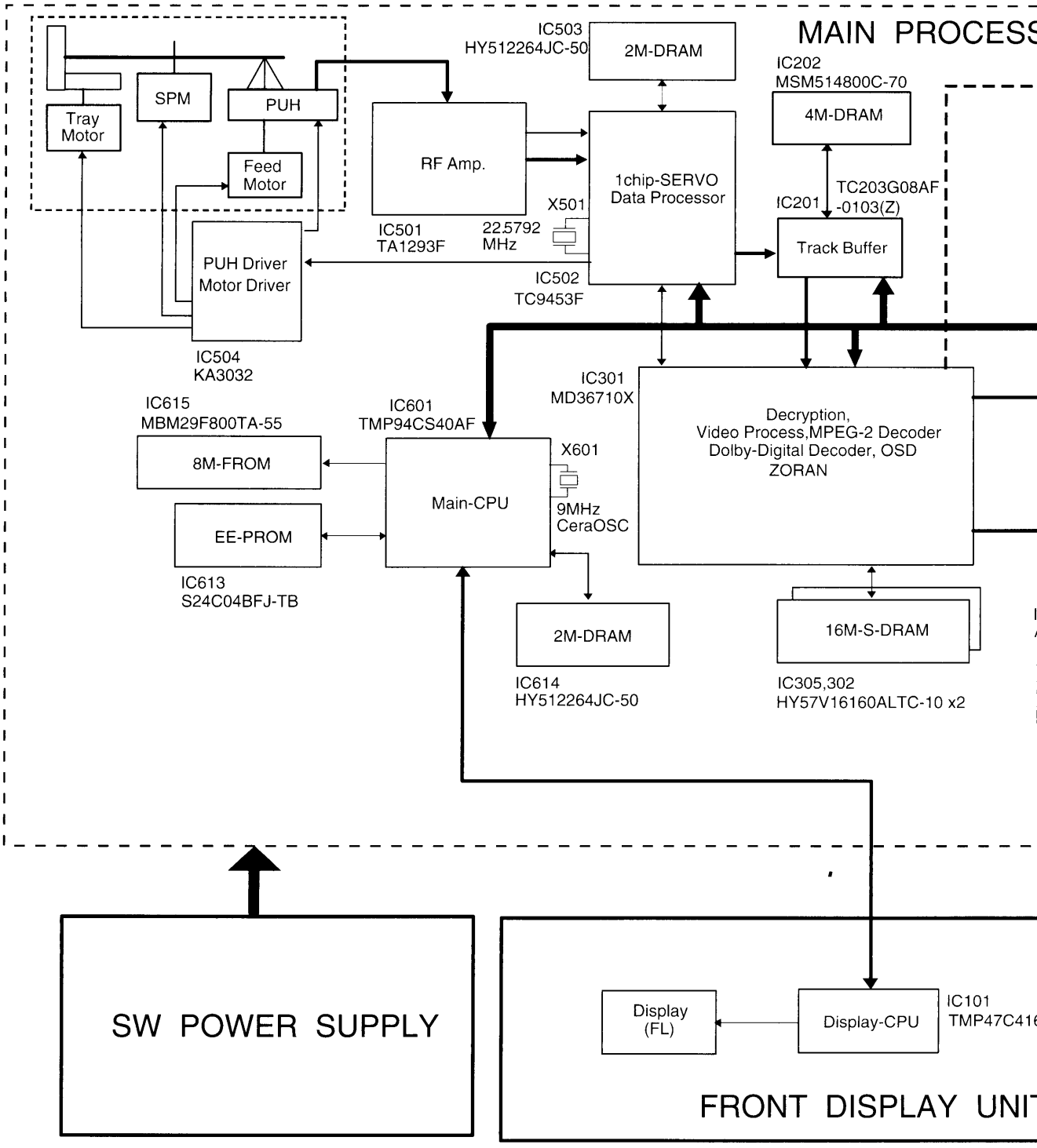


Fig.3-4-1

4. BLOCK DIAGRAMS

4-1. Overall Block Diagram



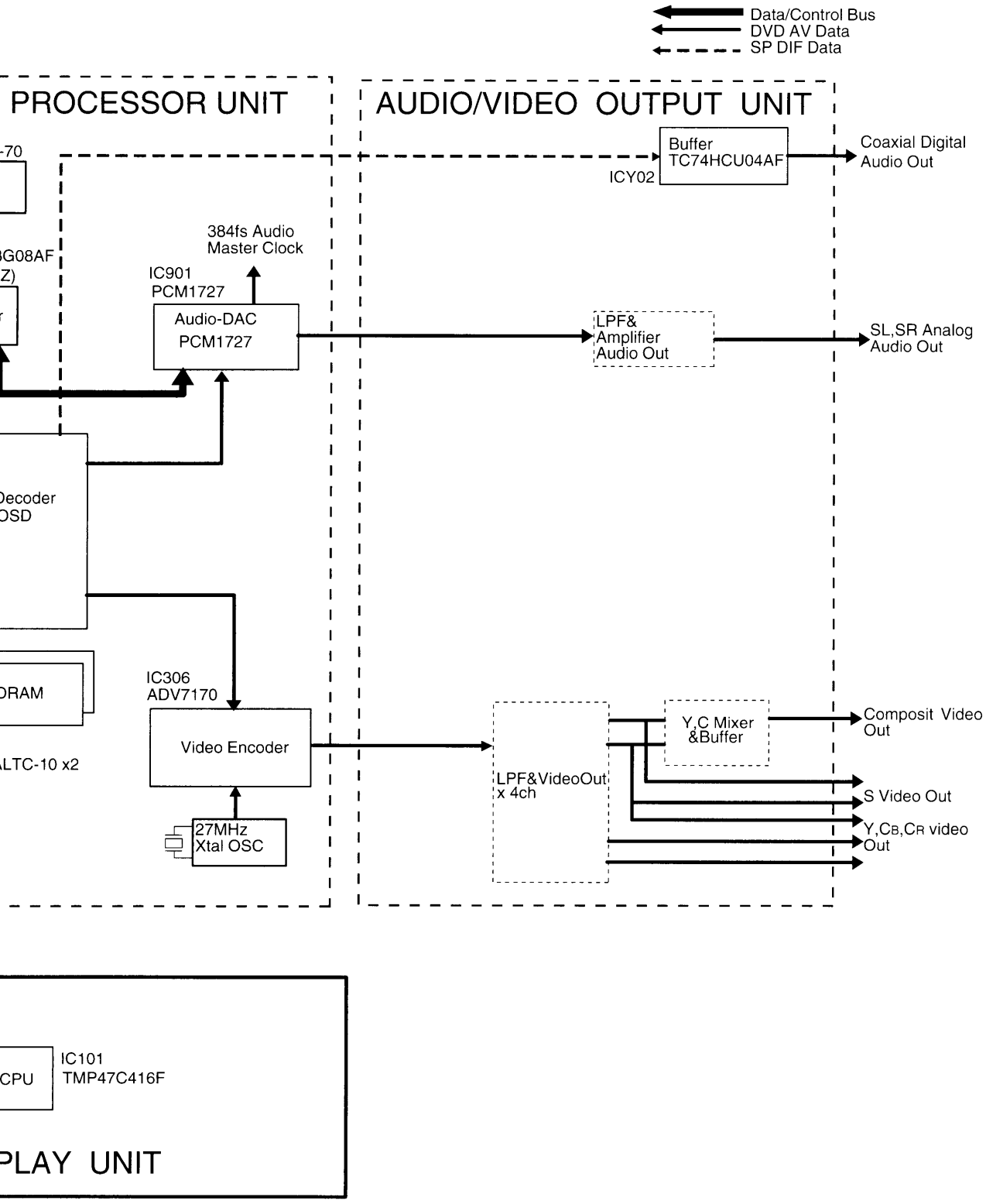

Data/Control Bus
DVD AV Data
SP DIF Data
PROCESSOR UNIT
AUDIO/VIDEO OUTPUT UNIT
Buffer
TC74HCU04AF
ICY02
Coaxial Digital
Audio Out
384fs Audio
Master Clock
IC901
PCM1727
Audio-DAC
PCM1727
LPF&
Amplifier
Audio Out
SL,SR Analog
Audio Out
IC306
ADV7170
Video Encoder
27MHz
Xtal OSC
LPF&VideoOut
x 4ch
Y,C Mixer
&Buffer
Composit Video
Out
S Video Out
Y,CB,CR video
Out
IC101
TMP47C416F
PLAY UNIT

Fig.3-4-1

4-2. Power Supply Block Diagram

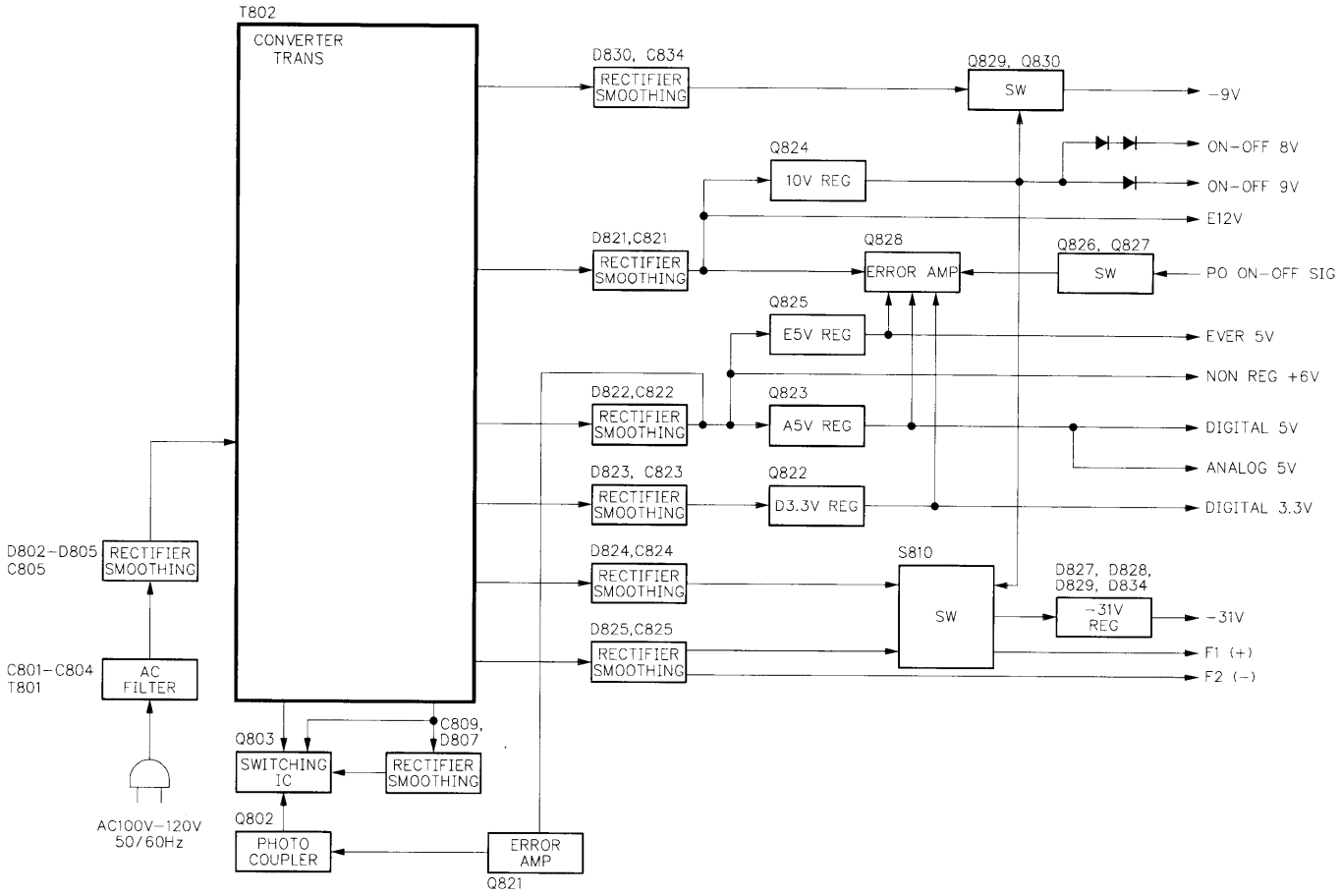


Fig. 3-4-2

4-3. Front Display, Power Switch Block Diagram

4-3-1. Front Display

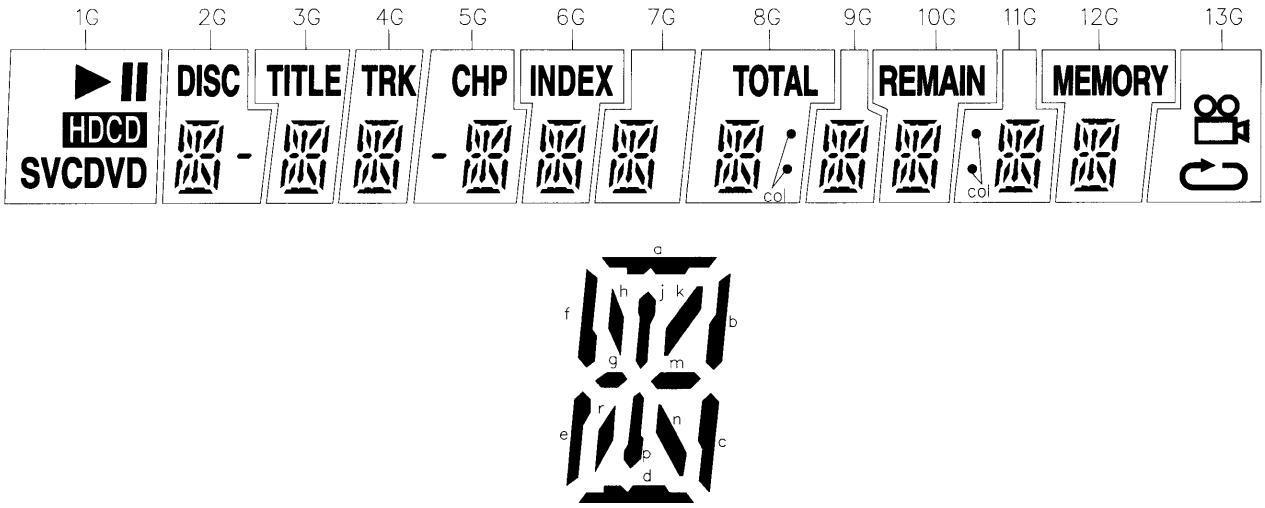


Fig. 3-4-3

4-3-2. Front Display Pattern

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
P1	▶	a	a	a	a	a	a	a	a	a	a	a	—
P2	II	b	b	b	b	b	b	b	b	b	b	b	—
P3	V	c	c	c	c	c	c	c	c	c	c	c	—
P4	C	d	d	d	d	d	d	d	d	d	d	d	—
P5	D	e	e	e	e	e	e	e	e	e	e	e	—
P6	VD	f	f	f	f	f	f	f	f	f	f	f	—
P7	S	g	g	g	g	g	g	g	g	g	g	g	—
P8	HDCD	h	h	h	h	h	h	h	h	h	h	h	—
P9	—	j	j	j	j	j	j	j	j	j	j	j	📹
P10	—	k	k	k	k	k	k	k	k	k	k	k	↩
P11	—	m	m	m	m	m	m	m	m	m	m	m	—
P12	—	n	n	n	n	n	n	n	n	n	n	n	—
P13	—	p	p	p	p	p	p	p	p	p	p	p	—
P14	—	r	r	r	r	r	r	r	r	r	r	r	—
P15	—	-	—	—	-	—	—	col	—	—	col	—	—
P16	—	DISC	TITLE	TRK	CHP	INDEX	—	TOTAL	—	REMAIN	—	MEMORY	—

Fig. 3-4-4

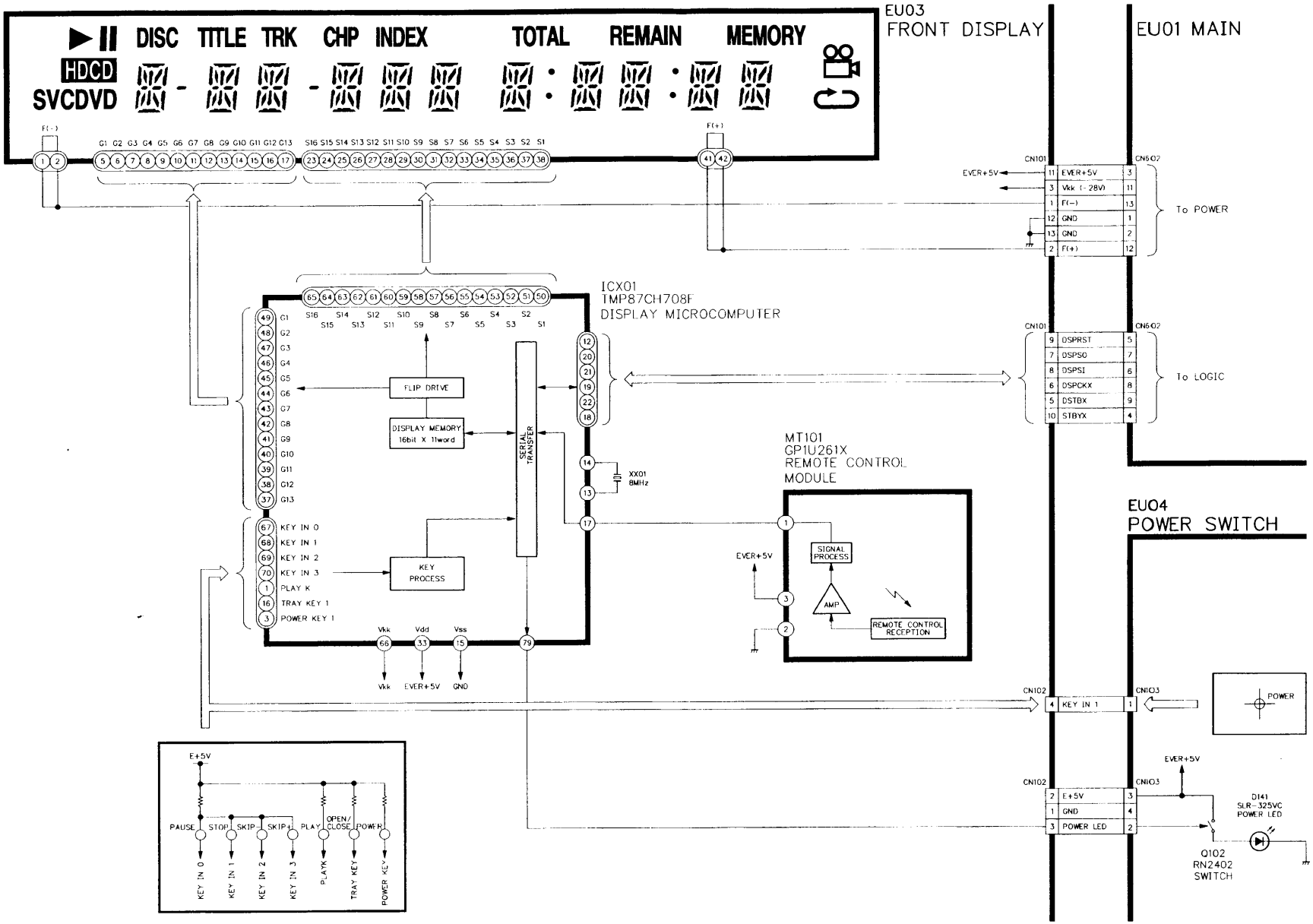
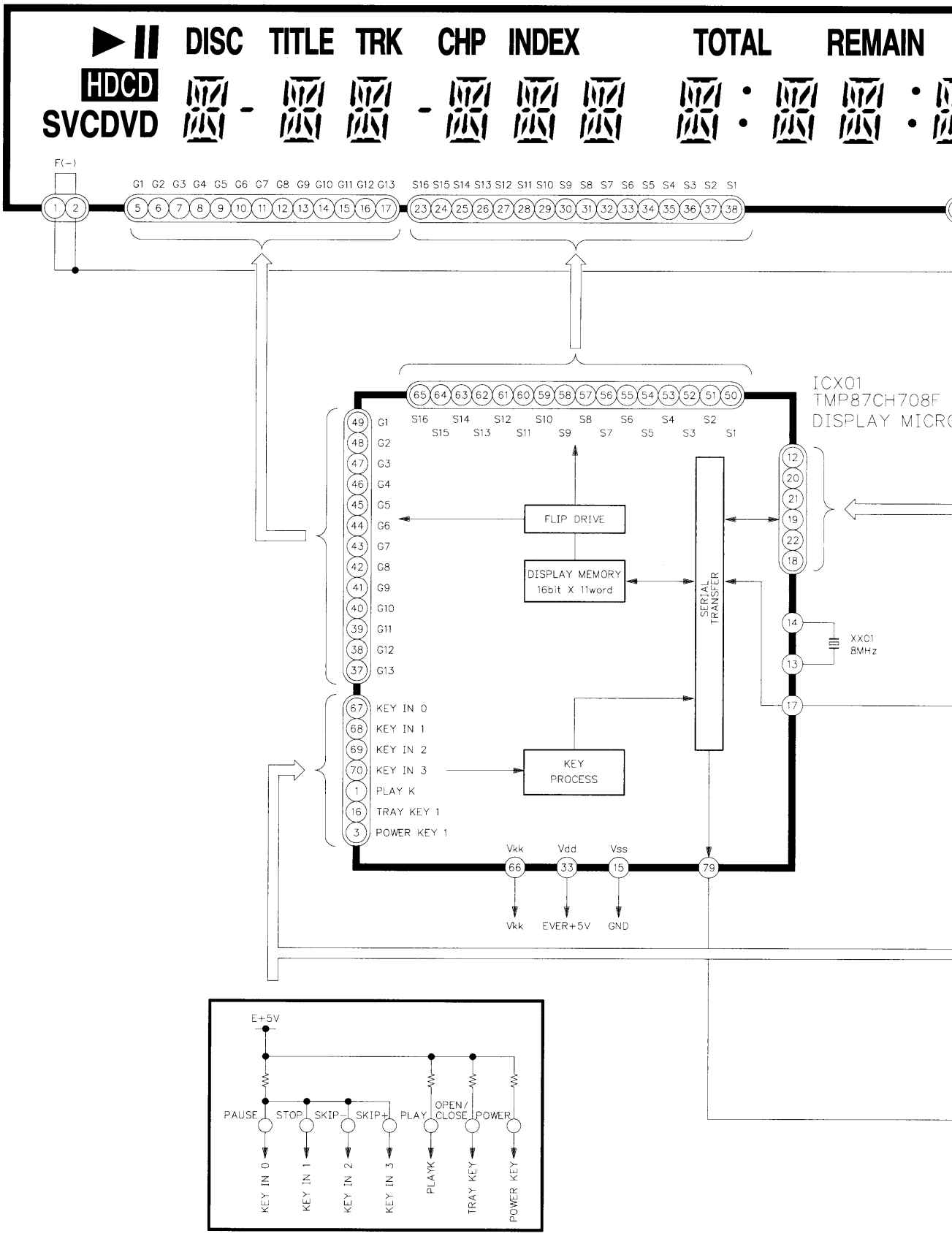

EU03
FRONT DISPLAY
EU01 MAIN
▶II DISC TITLE TRK CHP INDEX TOTAL REMAIN MEMORY
HDCD
SVCDVD
ICX01
TMP87CH708F
DISPLAY MICROCOMPUTER
FLIP DRIVE
DISPLAY MEMORY
16bit X 11word
SERIAL TRANSFER
KEY PROCESS
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
PLAY K
TRAY KEY 1
POWER KEY 1
XX01
8MHz
Vkk
Vdd
Vss
EVER+5V
GND
MT101
GP1U261X
REMOTE CONTROL
MODULE
SIGNAL PROCESS
AMP.
REMOTE CONTROL RECEPTION
CN101
CN502
EVER+5V
Vkk (-28V)
F(-)
GND
GND
F(+)
To POWER
DSPRST
DSPSO
DSPSI
DSPCKX
DSTBX
STBYX
To LOGIC
EU04
POWER SWITCH
CN102
CN103
KEY IN 1
POWER
E+5V
GND
POWER LED
D141
SLR-325VC
POWER LED
Q102
RN2402
SWITCH
PAUSE
STOP
SKIP-
SKIP+
PLAY
OPEN/CLOSE
POWER
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
PLAYK
TRAY KEY
POWER KEY

Fig. 3-4-5

4-3-3. Front Display, Power Switch Block Diagram



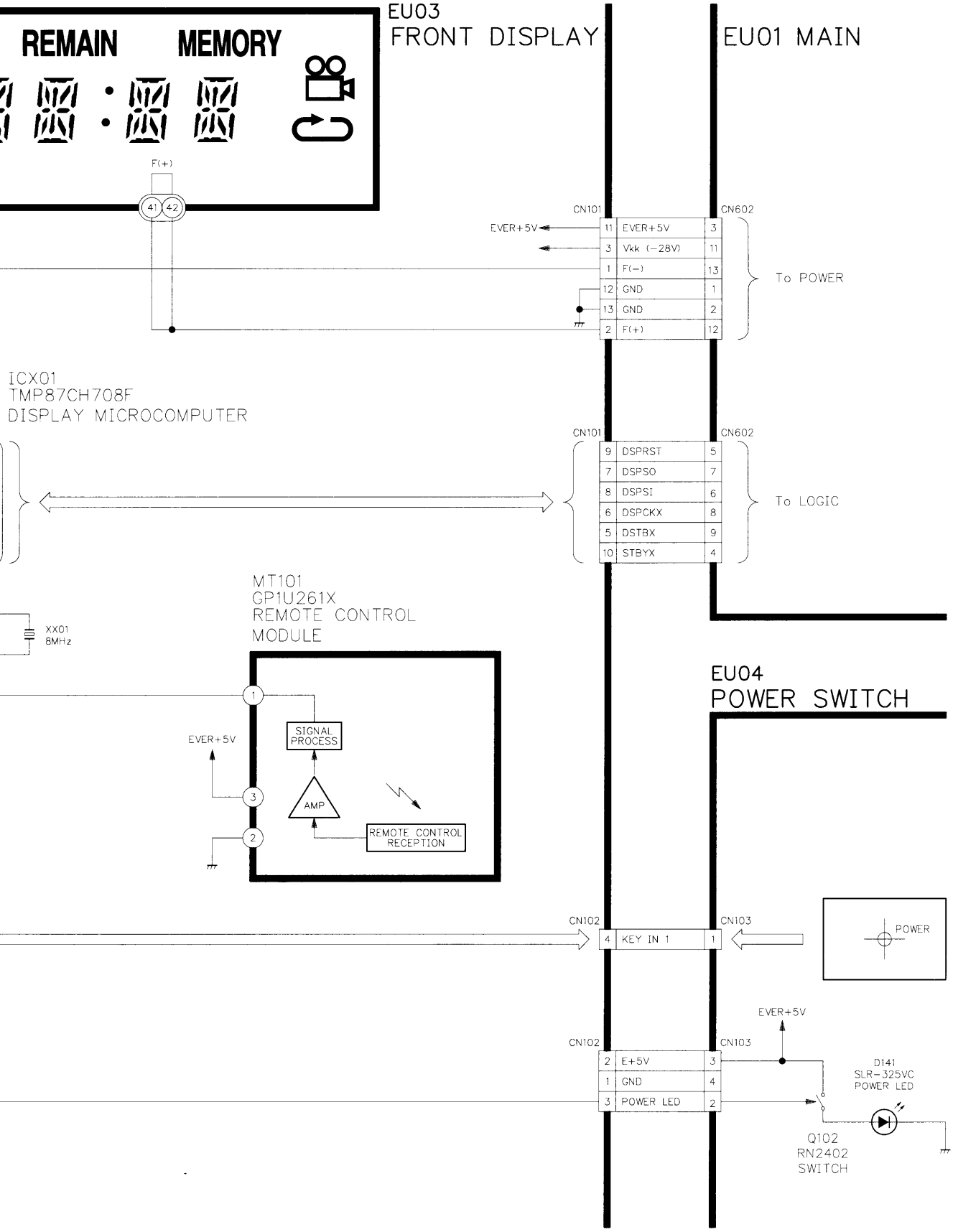

REMAIN
MEMORY
EU03
FRONT DISPLAY
EU01 MAIN
F(+)
41
42
CN101
CN602
EVER+5V
11 EVER+5V 3
3 Vkk (−28V) 11
1 F(−) 13
12 GND 1
13 GND 2
2 F(+) 12
To POWER
ICX01
TMP87CH708F
DISPLAY MICROCOMPUTER
CN101
CN602
9 DSPRST 5
7 DSPSO 7
8 DSPSI 6
6 DSPCKX 8
5 DSTBX 9
10 STBYX 4
To LOGIC
MT101
GP1U261X
REMOTE CONTROL
MODULE
XX01
8MHz
EVER+5V
SIGNAL PROCESS
AMP
REMOTE CONTROL RECEPTION
EU04
POWER SWITCH
CN102
CN103
4 KEY IN 1 1
POWER
EVER+5V
CN102
CN103
2 E+5V 3
1 GND 4
3 POWER LED 2
D141
SLR-325VC
POWER LED
Q102
RN2402
SWITCH

Fig. 3-4-5

4-4. Main Block Diagrams

4-4-1. Servo System Block Diagram

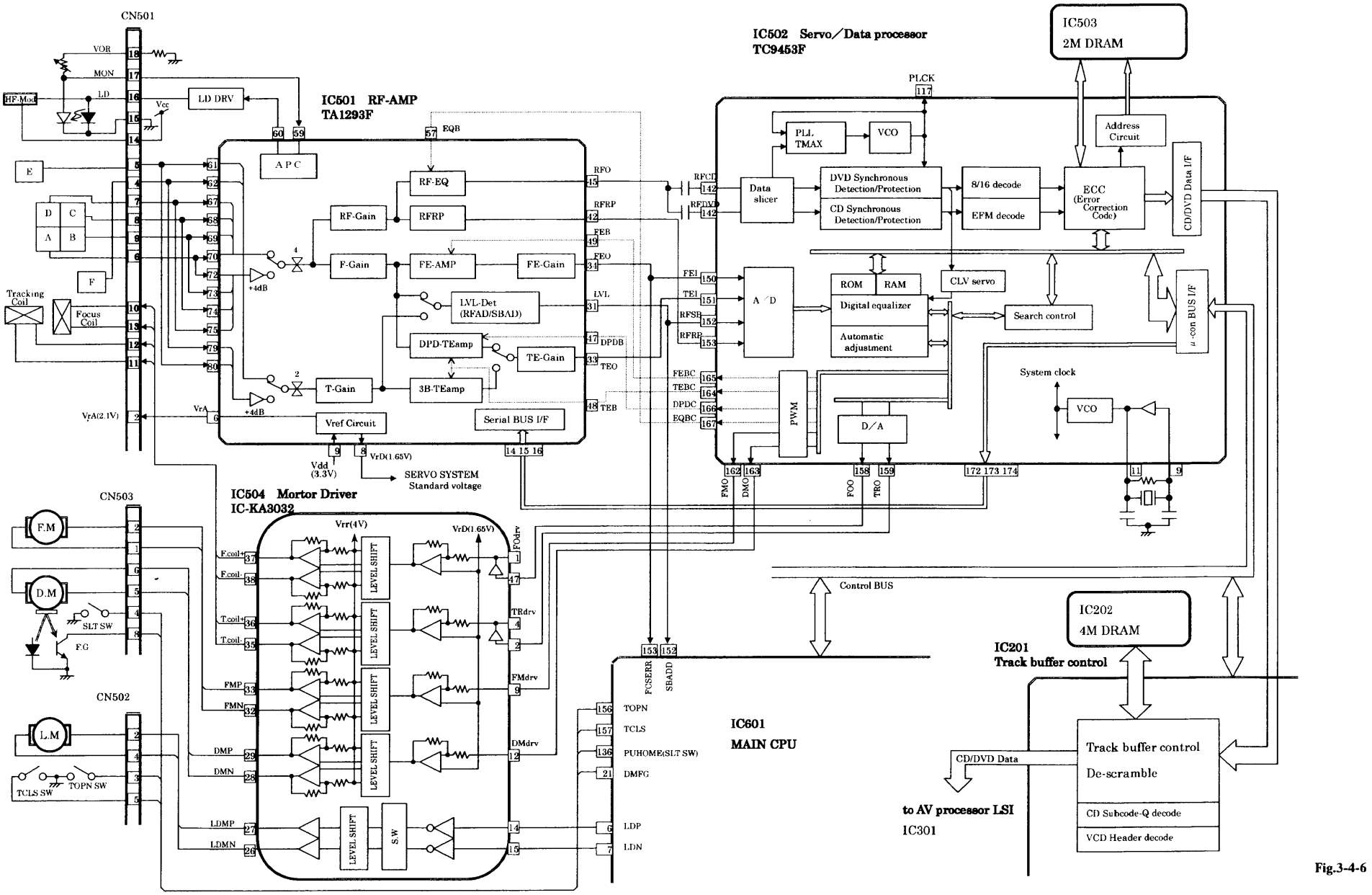
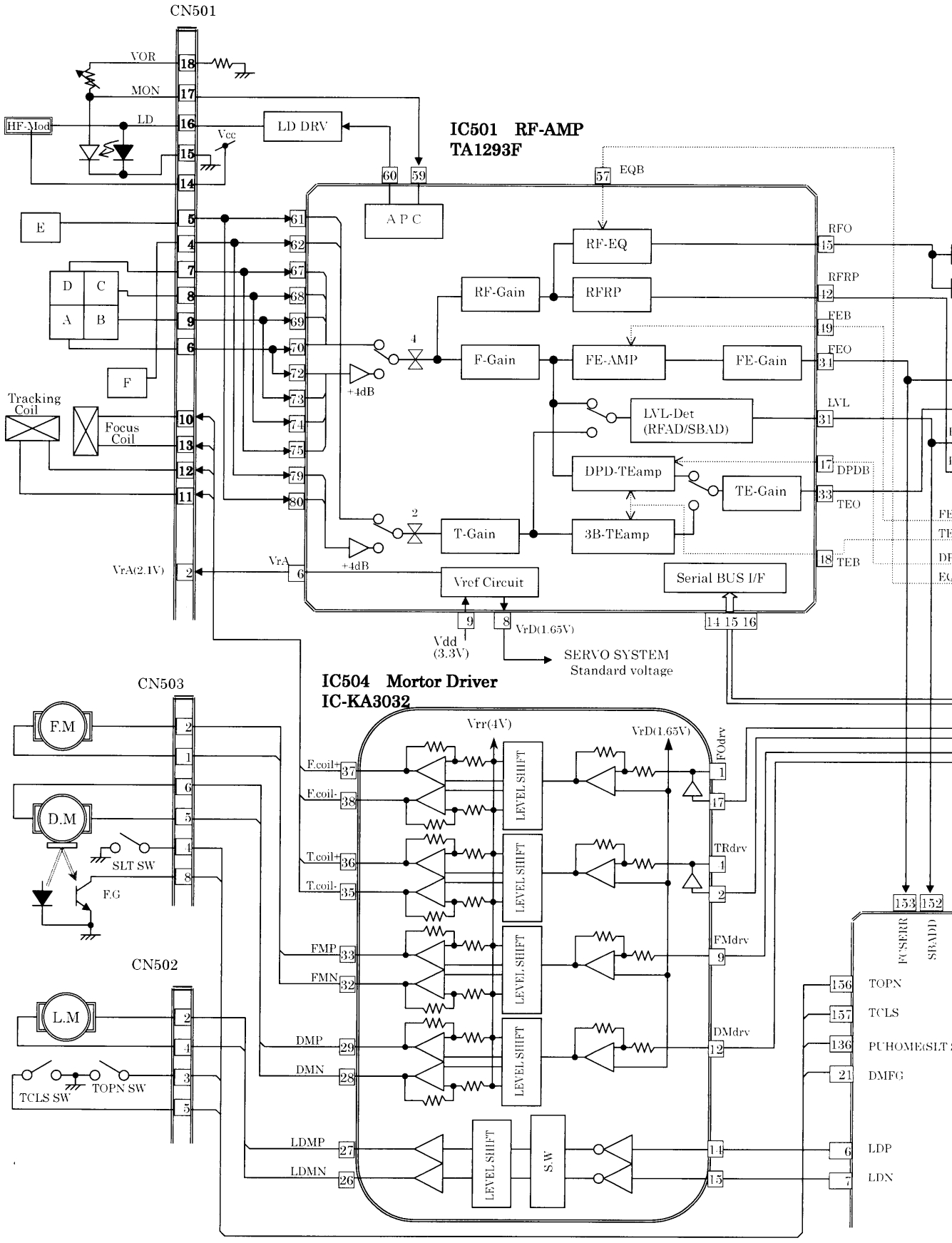


Fig.3-4-6

4-4. Main Block Diagrams

4-4-1. Servo System Block Diagram



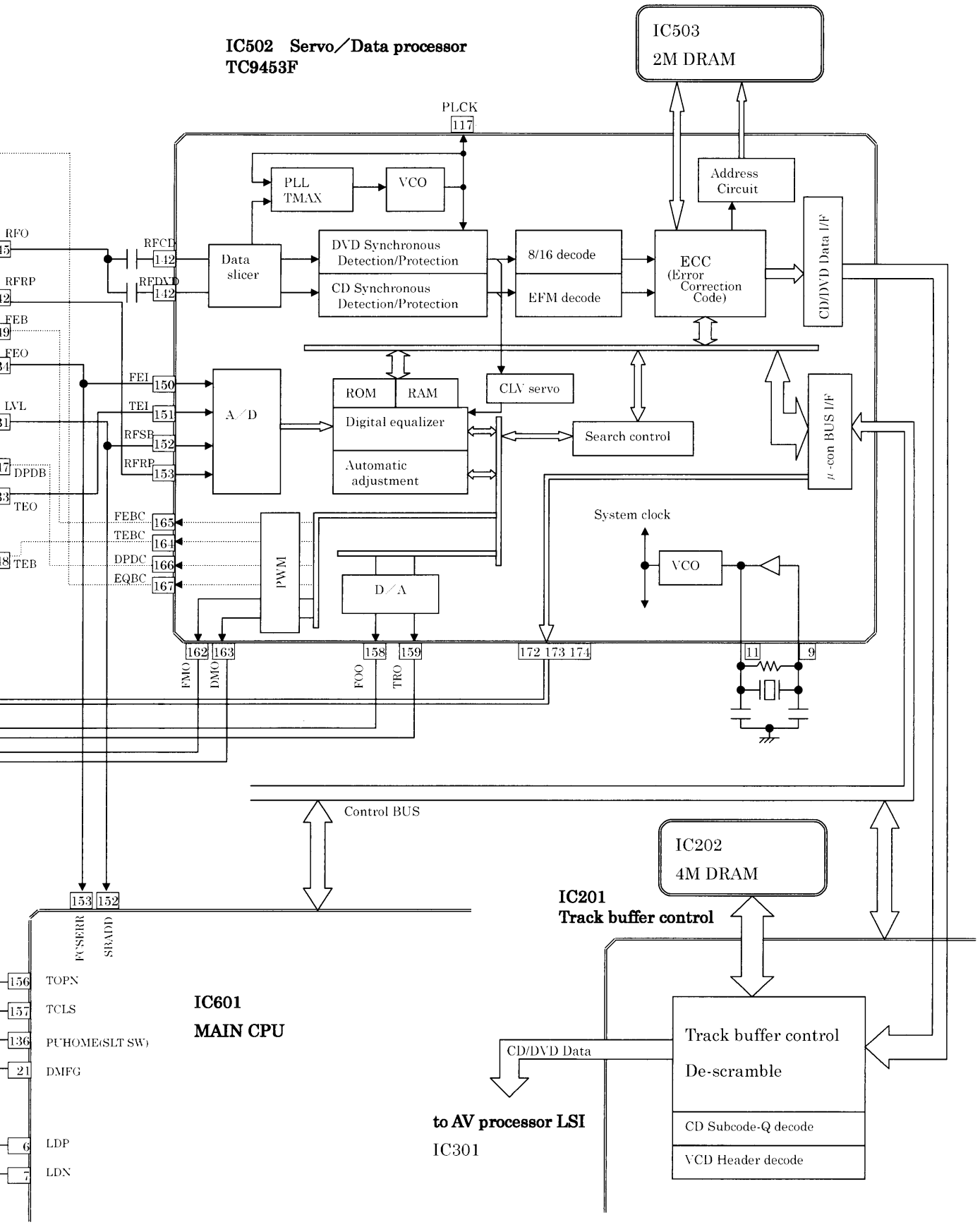

IC502 Servo/Data processor
TC9453F
IC503
2M DRAM
PLCK
117
PLL
TMAX
VCO
Address
Circuit
RFO
RFRP
FEB
FEO
LVL
DPDB
TEO
TEB
RFCD
142
RFDVD
142
Data
slicer
DVD Synchronous
Detection/Protection
CD Synchronous
Detection/Protection
8/16 decode
EFM decode
ECC
(Error
Correction
Code)
CD/DVD Data I/F
FEI
150
TEI
151
RFSB
152
RFRP
153
A/D
ROM
RAM
CLV servo
Digital equalizer
Automatic
adjustment
Search control
μ-con BUS I/F
FEBC
165
TEBC
164
DPDC
166
EQBC
167
PWM
D/A
System clock
VCO
162
163
158
159
172 173 174
11
9
FMO
DMO
FOO
TRO
Control BUS
IC202
4M DRAM
IC201
Track buffer control
153
152
FCSERR
SRADD
156
TOPN
157
TCLS
136
PUHOME(SLT SW)
21
DMFG
6
LDP
7
LDN
IC601
MAIN CPU
CD/DVD Data
Track buffer control
De-scramble
CD Subcode-Q decode
VCD Header decode
to AV processor LSI
IC301

Fig.3-4-6

4-4-2. Logical System Block Diagram

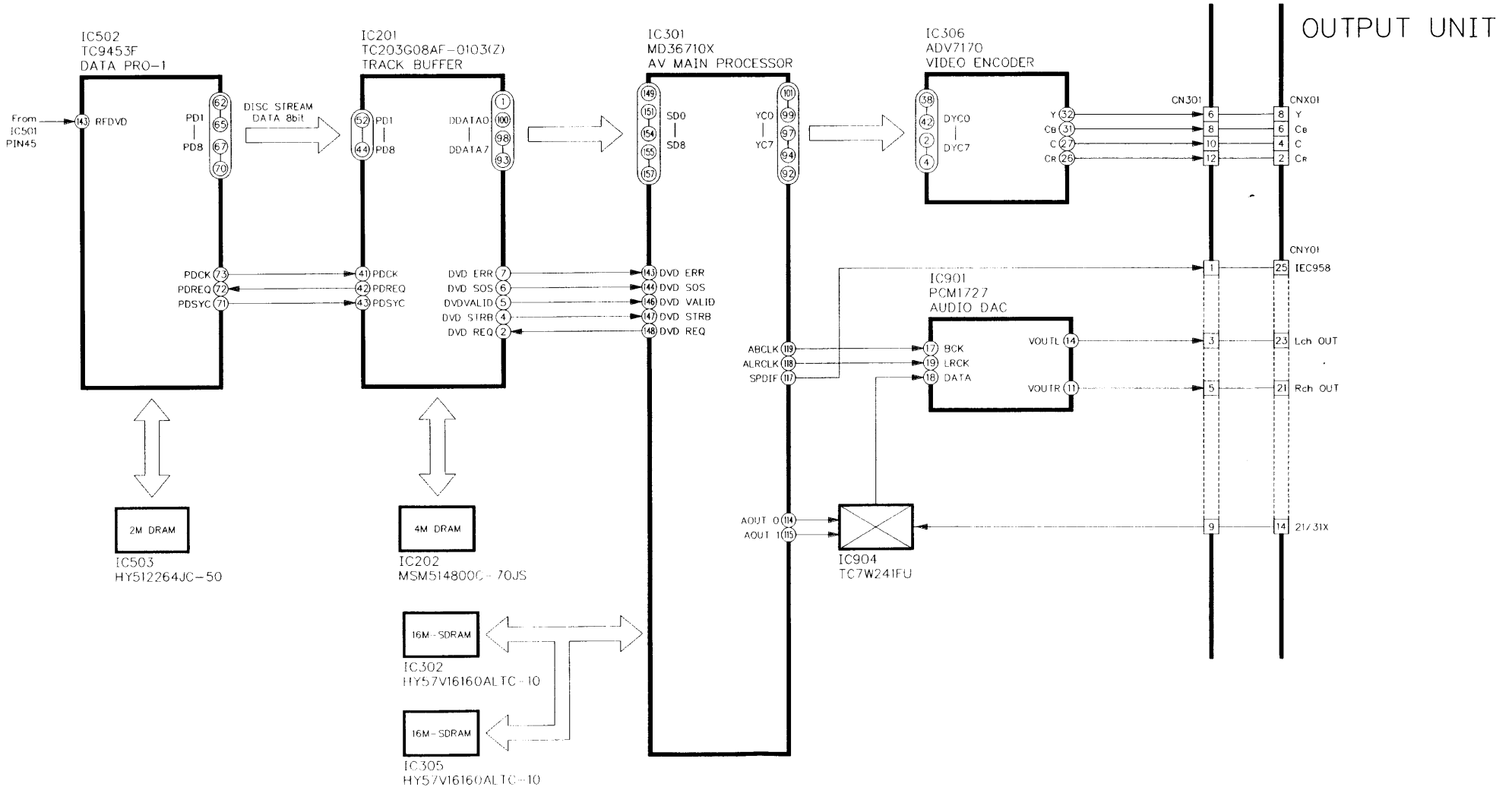
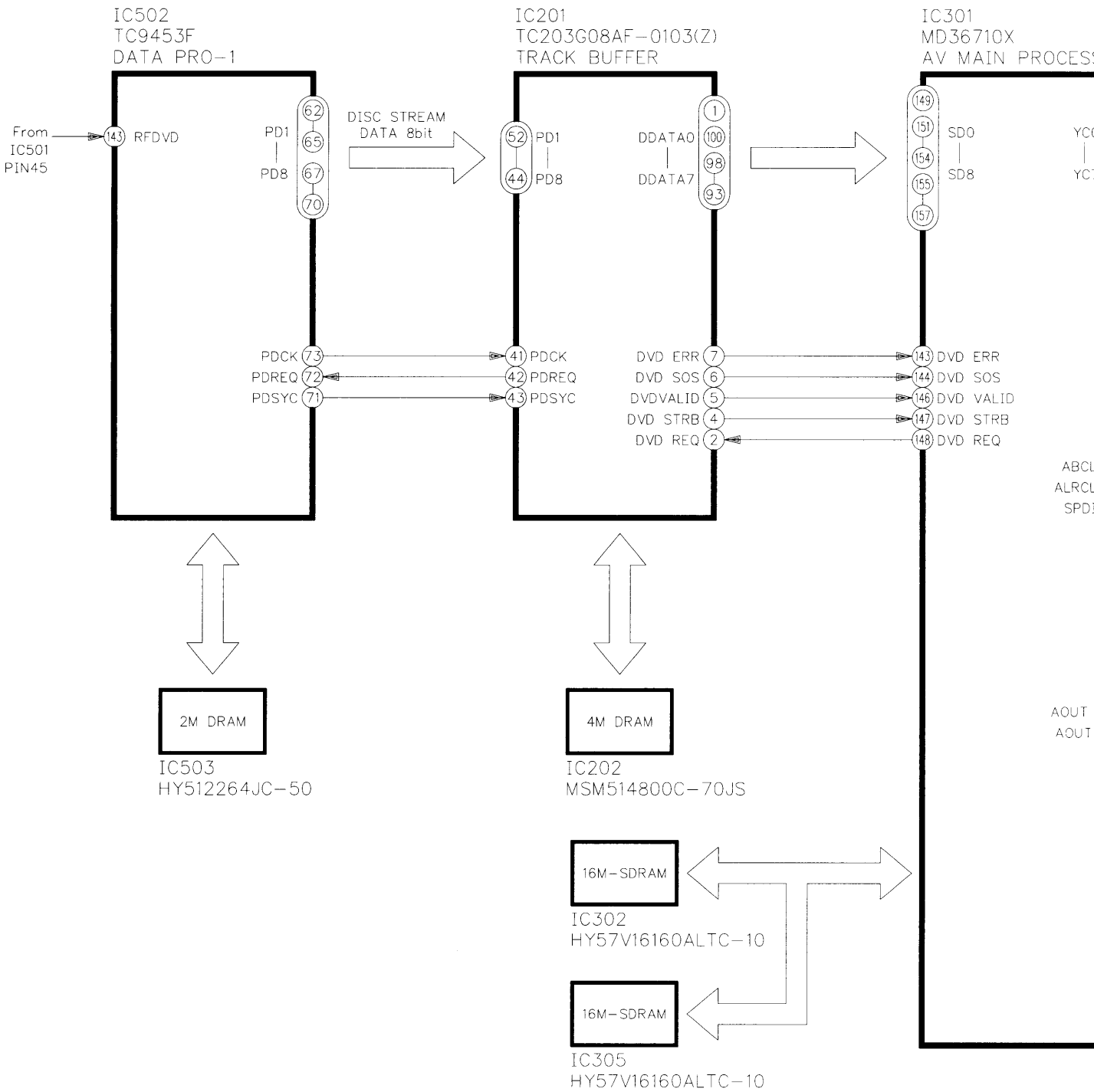


Fig. 3-4-7

4-4-2. Logical System Block Diagram



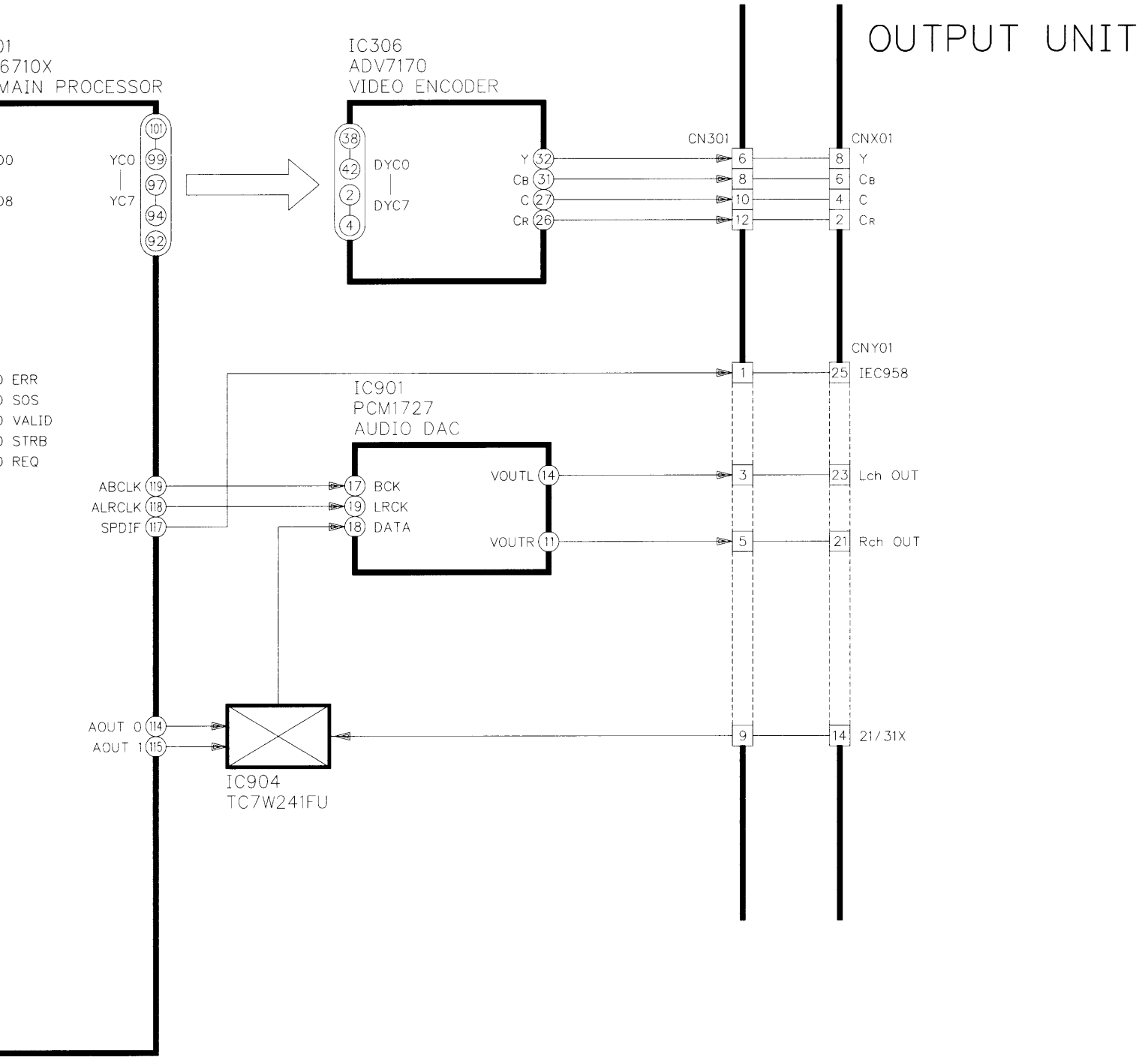

OUTPUT UNIT
01
6710X
MAIN PROCESSOR
IC306
ADV7170
VIDEO ENCODER
YC0
YC7
DYC0
DYC7
Y
CB
C
CR
CN301
CNX01
CNY01
IEC958
IC901
PCM1727
AUDIO DAC
ABCLK
ALRCLK
SPDIF
BCK
LRCK
DATA
VOUTL
VOUTR
Lch OUT
Rch OUT
AOUT 0
AOUT 1
21/31X
IC904
TC7W241FU
ERR
SOS
VALID
STRB
REQ

Fig. 3-4-7

4-5. Output Block Diagram

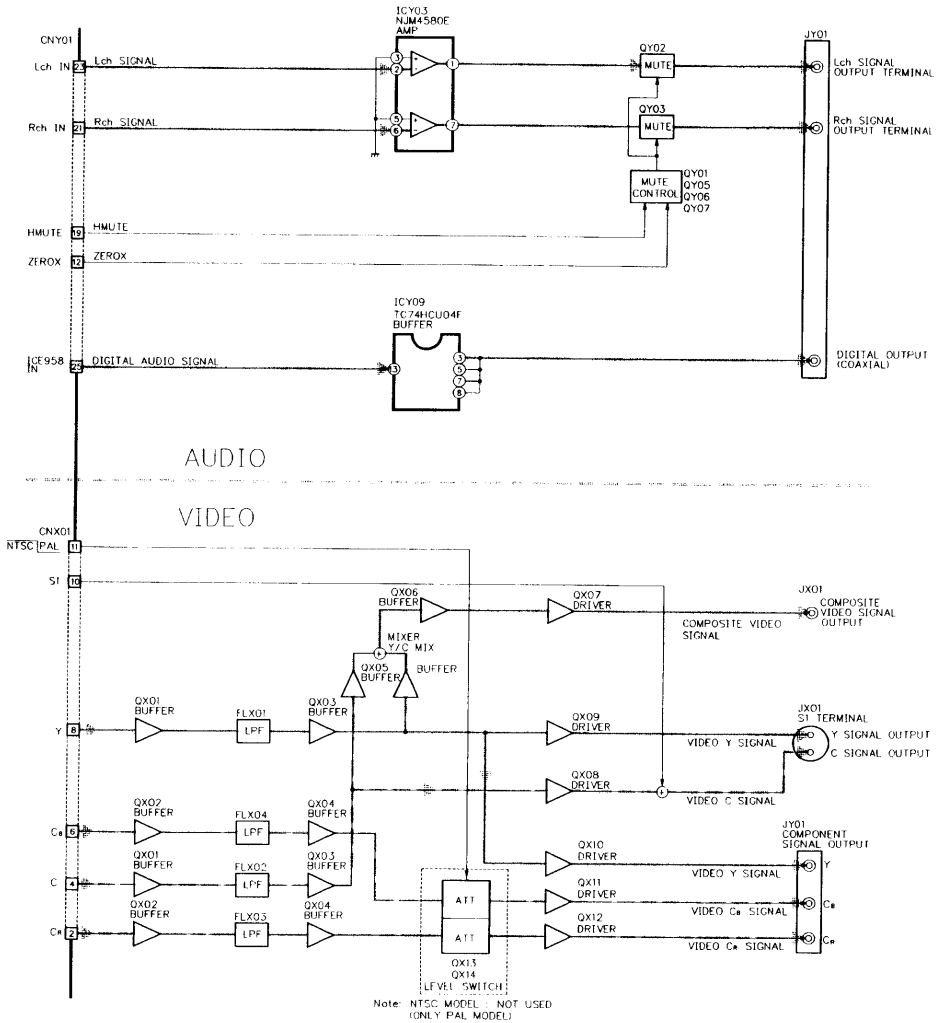


Fig. 3-4-8

5. CIRCUIT DIAGRAMS

5-1. Power Supply Circuit Diagram

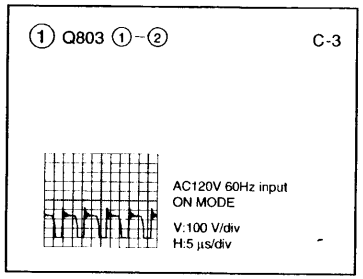


Fig. 3-5-1

Part No.	Location	Part No.	Location	Part No.	Location
C801	E1	D809	C3	R801	F2
C802	C1	D810	D4	R802	C4
C803	C1	D811	E4	R803	C4
C804	D1	D812	F4	R804	C2
C805	C2	D821	C5	R805	C3
C806	C3	D822	B5	R806	C3
C808	C3	D823	B5	R807	D3
C809	D4	D824	D5	R808	D3
C810	D3	D825	D5	R809	F4
C811	E2	D826	C8	R811	E4
C812	C3	D827	D7	R813	D4
C813	E4	D828	E7	R814	D4
C814	F4	D829	E7	R815	D4
C821	C5	D830	C5	R821	E4
C822	B5	D831	D6	R822	F4
C823	B5	D832	D7	R823	F4
C824	D5	D833	C8	R824	D8
C825	D5	D834	E7	R825	B8
C826	D8	D835	D6	R826	D6
C827	A8	D836	D6	R830	F5
C828	B8	F801	E1	R831	F5
C829	D8	F822	B5	R832	C7
C830	D9	F823	B5	R833	C7
C831	D7	L801	C4	R834	B8
C833	F4	L802	D3	R835	B8
C834	D5	L821	D5	R836	B7
C835	D6	P802	F1	R837	B7
C836	D6	Q801	E4	R838	C8
C837	D5	Q802	F4	R839	C8
C838	B8	Q803	E2	R840	B7
C839	C8	Q821	F4	R841	E5
C840	B8	Q822	D8	R842	E5
CN801	C9	Q823	B7	R843	C6
CN802	B9	Q824	C7	R844	C6
D802	B1	Q825	A8	R845	B6
D803	B2	Q826	B8	R846	C5
D804	C1	Q827	C8	R847	C5
D805	C2	Q828	C8	RF821	C5
D806	C4	Q829	D5	S810	D6
D807	D4	Q830	C6	T801	D1
D808	D3	Q831	D6	T802	B4

4-5. Output Block Diagram

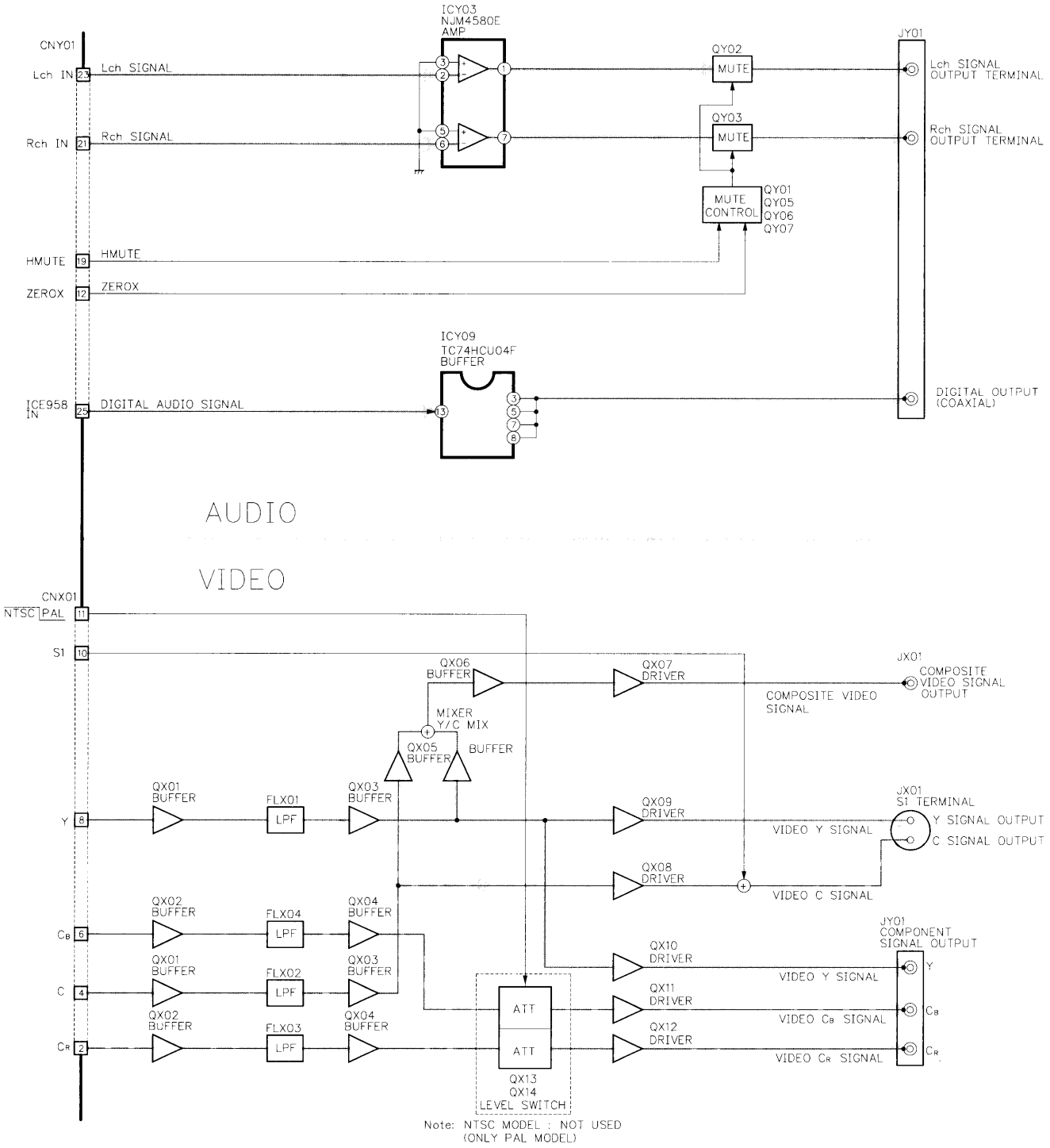


Fig. 3-4-8

5. CIRCUIT DIAGRAMS

5-1. Power Supply Circuit Diagram

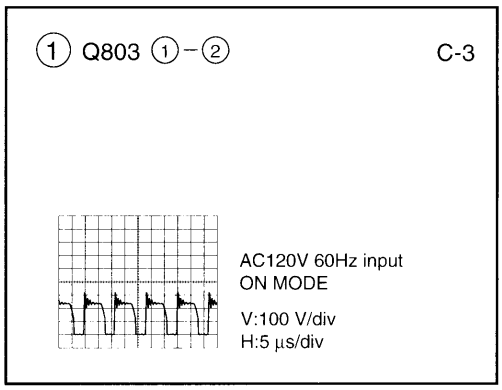
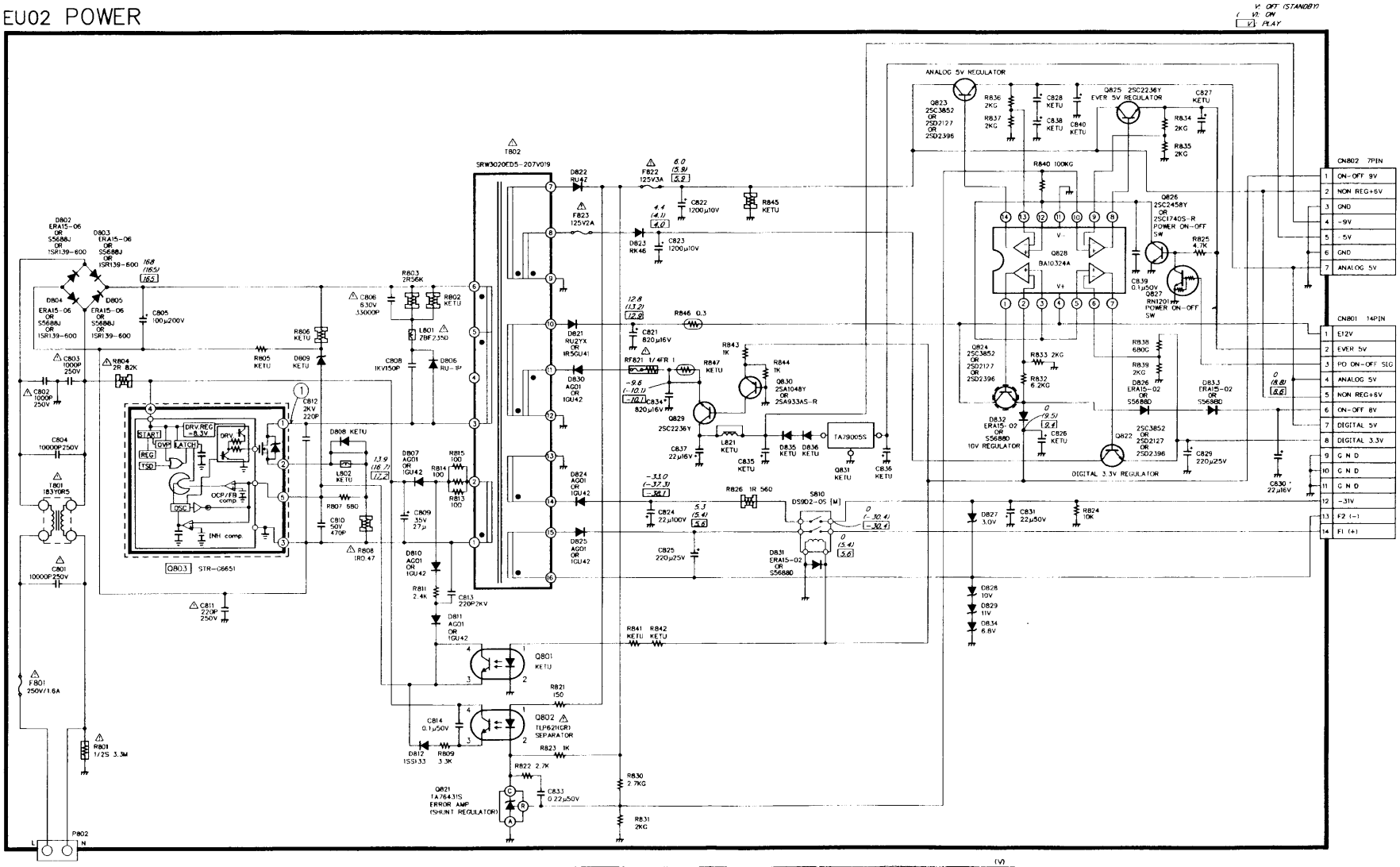


Fig. 3-5-1

Part No.	Location	Part No.	Location	Part No.	Location
C801	E1	D809	C3	R801	F2
C802	C1	D810	D4	R802	C4
C803	C1	D811	E4	R803	C4
C804	D1	D812	F4	R804	C2
C805	C2	D821	C5	R805	C3
C806	C3	D822	B5	R806	C3
C808	C3	D823	B5	R807	D3
C809	D4	D824	D5	R808	D3
C810	D3	D825	D5	R809	F4
C811	E2	D826	C8	R811	E4
C812	C3	D827	D7	R813	D4
C813	E4	D828	E7	R814	D4
C814	F4	D829	E7	R815	D4
C821	C5	D830	C5	R821	E4
C822	B5	D831	D6	R822	F4
C823	B5	D832	D7	R823	F4
C824	D5	D833	C8	R824	D8
C825	D5	D834	E7	R825	B8
C826	D8	D835	D6	R826	D6
C827	A8	D836	D6	R830	F5
C828	B8	F801	E1	R831	F5
C829	D8	F822	B5	R832	C7
C830	D9	F823	B5	R833	C7
C831	D7	L801	C4	R834	B8
C833	F4	L802	D3	R835	B8
C834	D5	L821	D5	R836	B7
C835	D6	P802	F1	R837	B7
C836	D6	Q801	E4	R838	C8
C837	D5	Q802	F4	R839	C8
C838	B8	Q803	E2	R840	B7
C839	C8	Q821	F4	R841	E5
C840	B8	Q822	D8	R842	E5
CN801	C9	Q823	B7	R843	C6
CN802	B9	Q824	C7	R844	C6
D802	B1	Q825	A8	R845	B6
D803	B2	Q826	B8	R846	C5
D804	C1	Q827	C8	R847	C5
D805	C2	Q828	C8	RF821	C5
D806	C4	Q829	D5	S810	D6
D807	D4	Q830	C6	T801	D1
D808	D3	Q831	D6	T802	B4

EU02 POWER



(V)

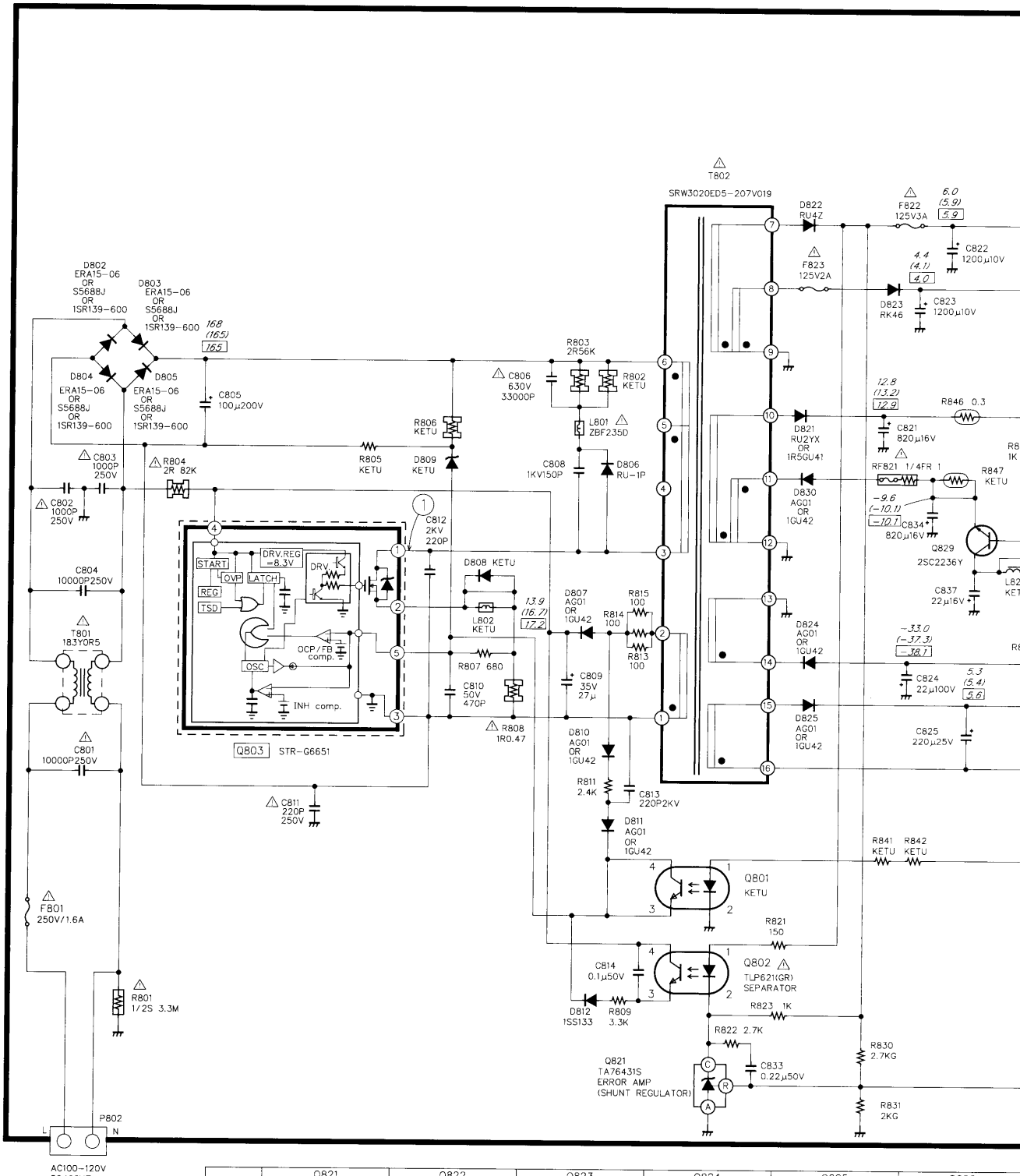
	Q821			Q822			Q823			Q824			Q825			Q826			Q827			Q829			Q830		
	A	C	R	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
OFF	0	4.8	2.5	0	4.4	0	0	6.0	0	0	12.8	0	5.0	6.0	5.6	0	0	0.7	0	0.7	0	-9.6	0	-8.8	0	-8.8	0
ON	0	4.8	2.5	3.3	4.1	4.0	4.9	5.9	5.6	10.2	13.2	10.8	5.0	5.9	5.6	0	2.5	0	0	0	4.6	-10.1	-10.0	-9.4	0.7	-9.4	0
PLAY	0	4.8	2.5	3.3	4.1	4.0	4.9	5.9	5.6	10.2	12.8	10.8	5.0	5.9	5.6	0	2.5	0	0	0	4.6	-10.1	-10.0	-9.4	0.7	-9.4	0

(V)

	Q828													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
OFF	0	0	0	12.8	0	0	0	5.6	2.5	2.5	0	0	0	0
ON	10.8	2.5	2.5	13.2	2.5	2.5	4.0	5.6	2.5	2.5	0	2.5	2.5	5.6
PLAY	10.8	2.5	2.5	12.8	2.5	2.5	4.0	5.6	2.5	2.5	0	2.5	2.5	5.6

Fig. 3-5-2

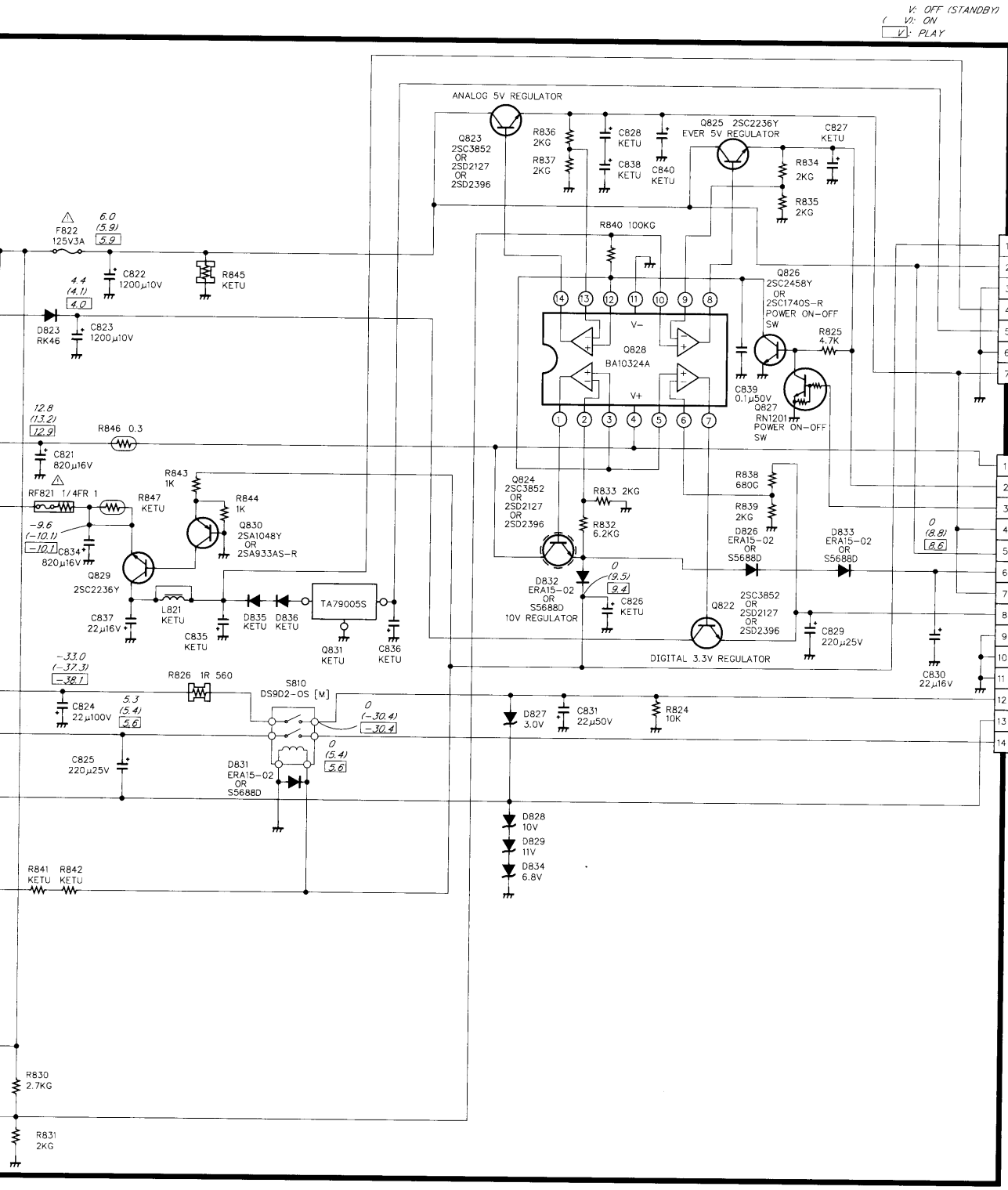
EU02 POWER



	Q821			Q822			Q823			Q824			Q825			Q826		
	A	C	R	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
OFF	0	4.8	2.5	0	4.4	0	0	6.0	0	0	12.8	0	5.0	6.0	5.6	0	0	0.7
ON	0	4.8	2.5	3.3	4.1	4.0	4.9	5.9	5.6	10.2	13.2	10.8	5.0	5.9	5.6	0	2.5	0
PLAY	0	4.8	2.5	3.3	4.1	4.0	4.9	5.9	5.6	10.2	12.8	10.8	5.0	5.9	5.6	0	2.5	0

(V)

	Q828													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
OFF	0	0	0	12.8	0	0	0	5.6	2.5	2.5	0	0	0	0
ON	10.8	2.5	2.5	13.2	2.5	2.5	4.0	5.6	2.5	2.5	0	2.5	2.5	5.6
PLAY	10.8	2.5	2.5	12.8	2.5	2.5	4.0	5.6	2.5	2.5	0	2.5	2.5	5.6



(V)

	Q826			Q827			Q829			Q830		
	B	E	C	B	E	C	B	E	C	B	E	C	B
	5.6	0	0	0.7	0	0.7	0	−9.6	0	−8.8	0	−8.8	0
	5.6	0	2.5	0	0	0	4.6	−10.1	−10.0	−9.4	0.7	−9.4	0
	5.6	0	2.5	0	0	0	4.6	−10.1	−10.0	−9.4	0.7	−9.4	0

Fig. 3-5-2

5-2. Front Display, Power Switch Circuit Diagram

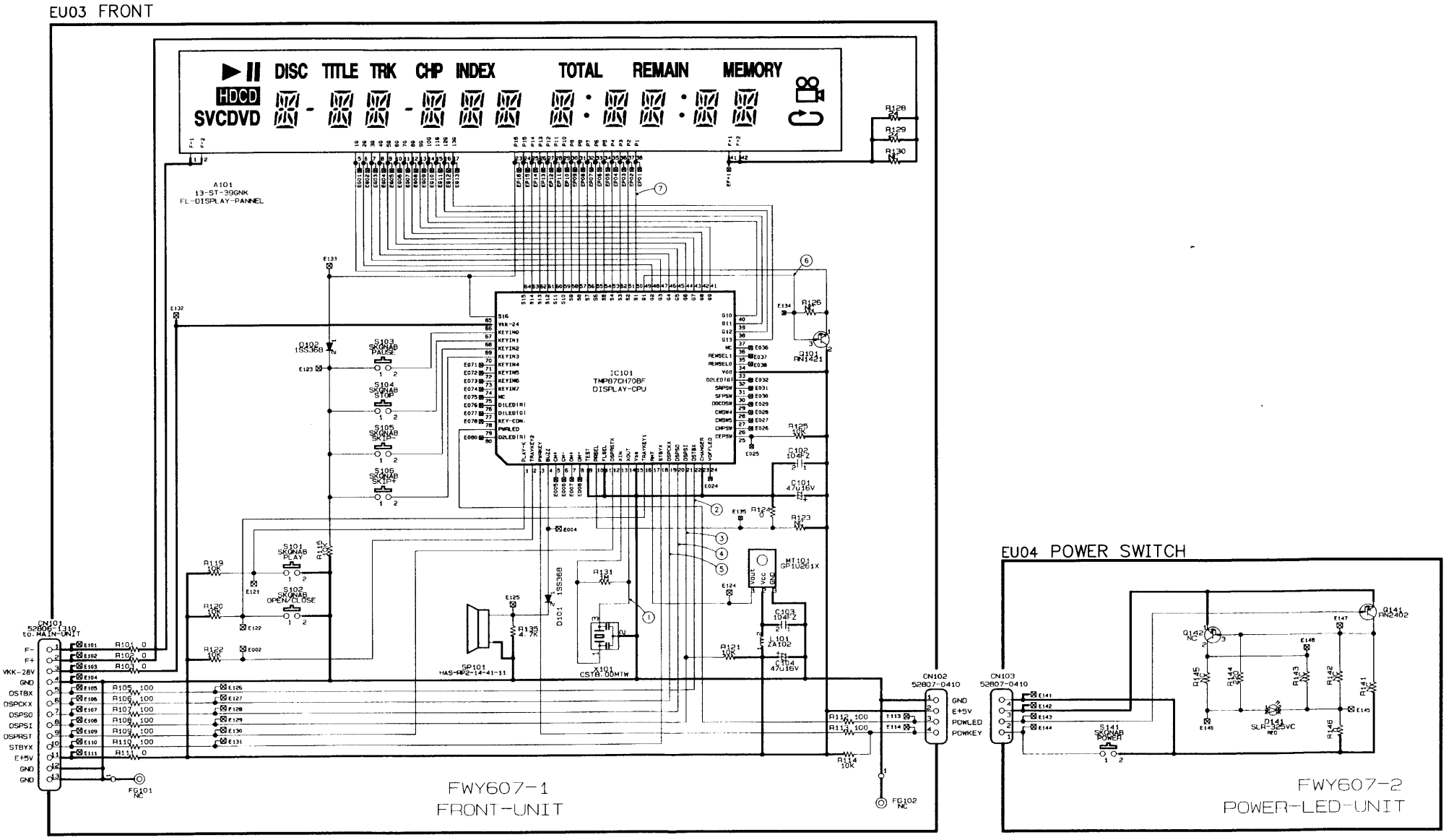
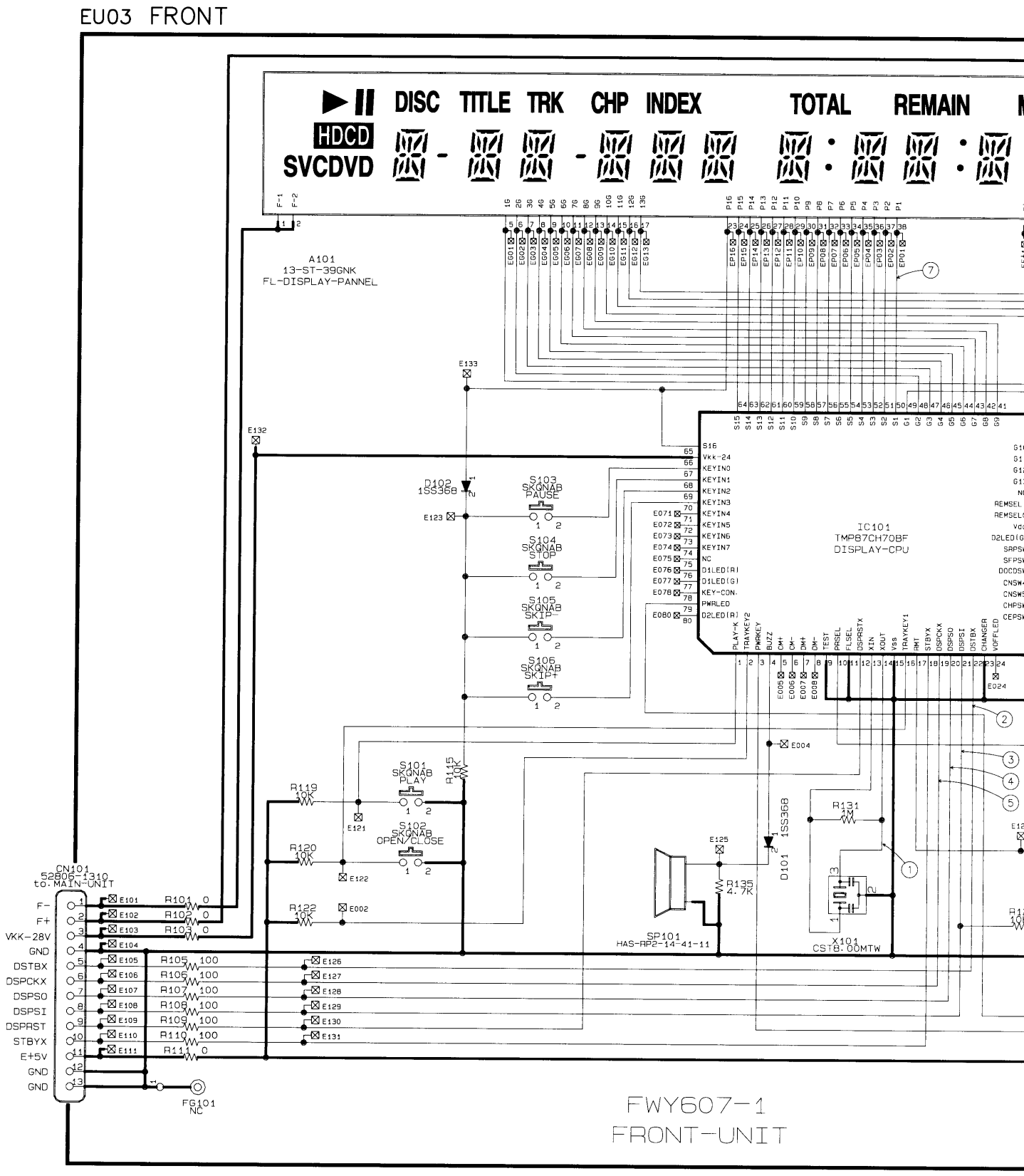


Fig. 3-5-3

5-2. Front Display, Power Switch Circuit Diagram



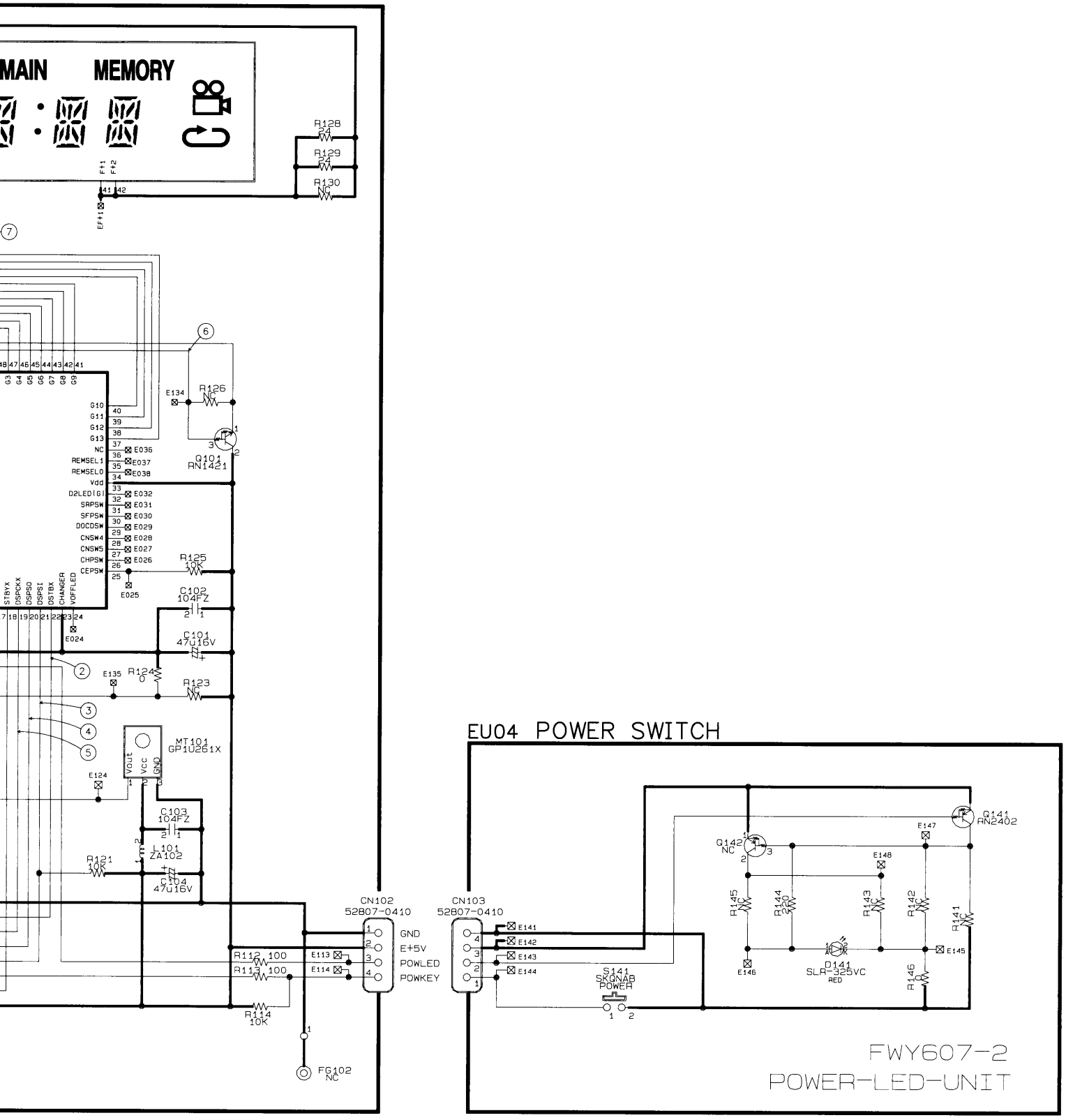

MAIN MEMORY
R128 24
R129 24
R130 NC
R126 NC
Q101 RN1421
R125 10K
C102 104FZ
C101 47U16V
R124 0
R123 NC
MT101 GP1U261X
C103 104FZ
L101 ZA102
C104 47U16V
R121 10K
R112 100
R113 100
R114 10K
CN102 52807-0410
GND
E+5V
POWLED
POWKEY
CN103 52807-0410
FG102 NC
EU04 POWER SWITCH
Q141 RN2402
Q142 NC
R145 NC
R144 220
R143 NC
R142 NC
R141 NC
R146 10
D141 SLR-325VC RED
S141 SKQNAB POWER
FWY607-2
POWER-LED-UNIT

Fig. 3-5-3

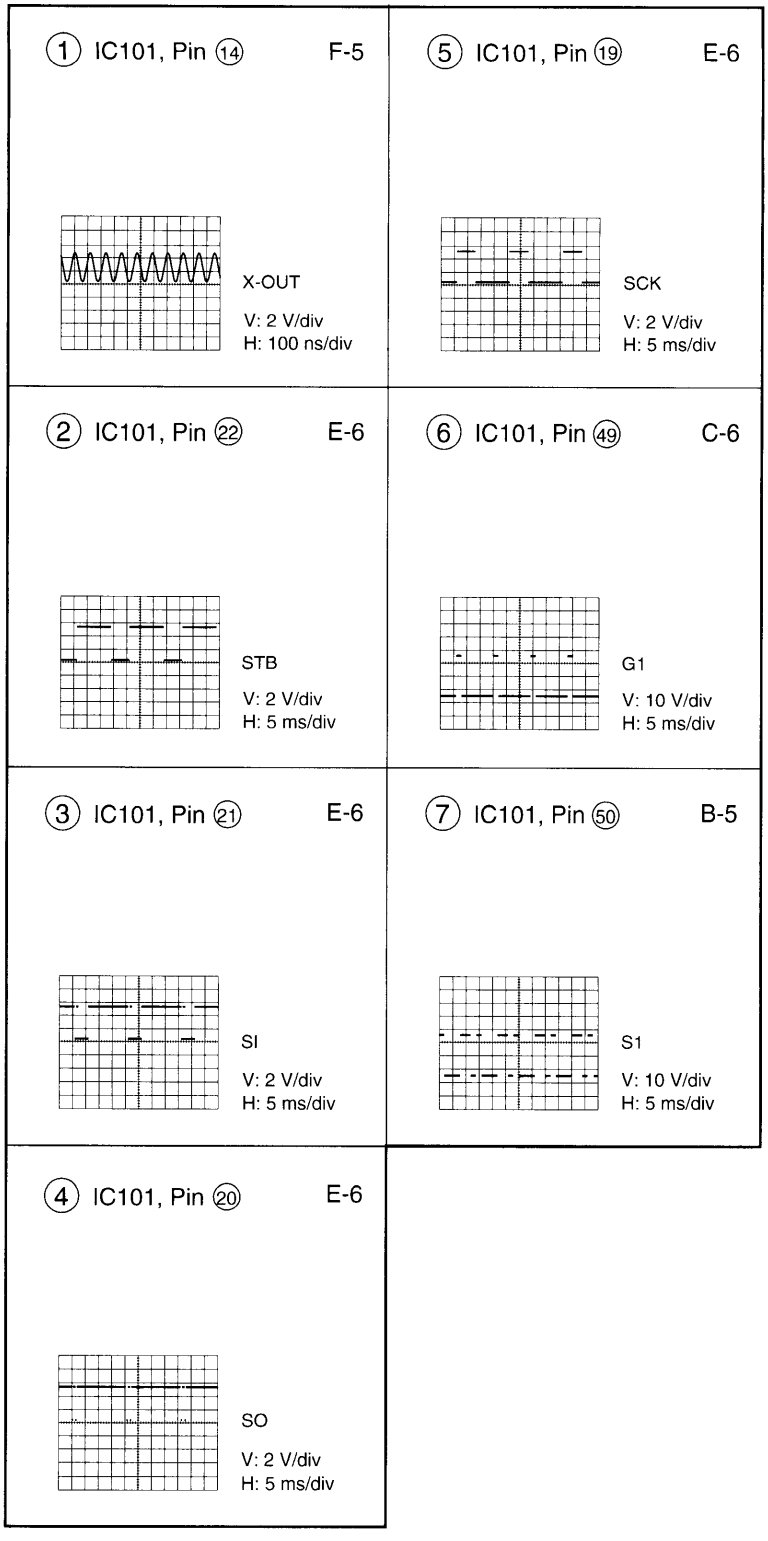


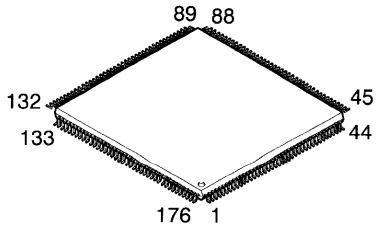
Fig. 3-5-4

Part No.	Location	Part No.	Location
A101	B2	EG03	B3
C101	E6	EG04	B3
C102	D6	EG05	B3
C103	F6	EG06	B4
C104	F6	EG07	B4
CN101	F1	EG08	B4
CN102	F7	EG09	B4
CN103	F8	EG10	B4
D101	F5	EG11	B4
D102	D3	EG12	B4
D141	F9	EG13	B4
E002	F3	EP01	B5
E004	E5	EP02	B5
E005	E5	EP03	B5
E006	E5	EP04	B5
E007	E5	EP05	B5
E008	E5	EP06	B5
E025	D6	EP07	B5
E026	D6	EP08	B5
E027	D6	EP09	B5
E028	D6	EP10	B5
E029	D6	EP11	B5
E030	D6	EP12	B5
E031	D6	EP13	B4
E032	D6	EP14	B4
E036	D6	EP15	B4
E037	D6	EP16	B4
E038	D6	FG101	G2
E071	D4	FG102	G7
E072	D4	IC101	D5
E073	D4	L101	F6
E074	D4	MT101	E6
E075	D4	Q101	D6
E076	D4	Q141	F10
E077	D4	Q142	F9
E078	D4	R101	F2
E080	D4	R102	F2
E101	F1	R103	F2
E102	F1	R105	F2
E103	F1	R106	F2
E104	F1	R107	F2
E105	F1	R108	F2
E106	F1	R109	F2
E107	F1	R110	F2
E108	F1	R112	F7
E109	F1	R113	F7
E110	F1	R114	G7
E111	G1	R115	E3
E113	F7	R119	E2
E114	F7	R120	E2
E121	E3	R121	F6
E122	F3	R122	F2
E123	D3	R123	E6
E124	E6	R124	E6
E125	E4	R125	D6
E126	F2	R126	C6
E127	F2	R128	B7
E128	F2	R129	B7
E129	F2	R130	B7
E130	F2	R131	E5
E131	F2	R135	F4
E132	C2	R141	F10
E133	C3	R142	F10
E134	C6	R143	F10
E135	E6	R144	F9
E141	F8	R145	F9
E142	F8	R146	F10
E143	F8	S101	E3
E144	F8	S102	E3
E145	F10	S103	D3
E146	F9	S104	D3
E147	F10	S105	D3
E148	F10	S106	E3
EF+1	B6	S141	F8
EG01	B3	SP101	F4
EG02	B3	X101	F5

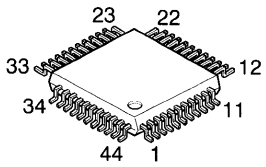
5-3. Main Circuit Diagrams

5-3-1. Main ICs Information

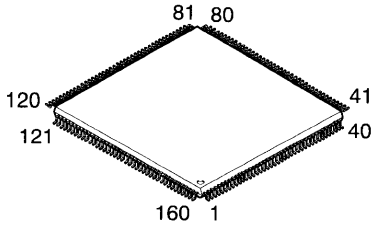
TC9453F



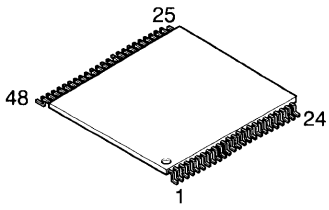
ADV7170



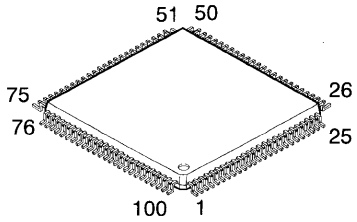
MD36710X, TMP94CS40AF



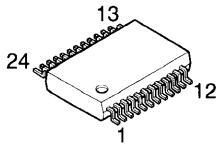
MBM29F800TA-55



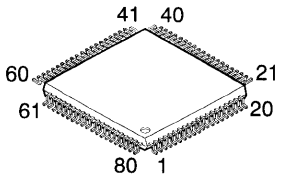
TC203G08AF



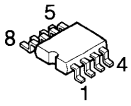
PCM1727



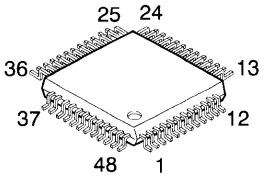
TA1293F



S24C01AFJ-TB



KA3032



Main ICs Function

Table 3-5-1

Ref. No.	IC Name	Function	Detail
IC613	S24C01AFJ-TB	EE-PROM	Setup default, memorization of specification setting.
IC306	ADV7170	Video Encorder	Built-in D/A converter. Encodes digital video signal to analog video signal of NTSC/PAL system.
IC301	MD36710X	AV Decorder	Decryption, MPEG-2 Decode, Audio Decode, Sub Picture Decode, OSD.
IC502	TC9453F	SERVO & Data Processor	Performs servo control of DVD or CD, and performs demodulation and correction of RF signal.
IC501	TA1293F	RF Signal processing IC	Equalizes of playback RF signal and generates error detection signal required for each servo operation.
IC504	KA3032	5-CH Motor Driver	5ch driver for motor driving.
IC901	PCM1727	DA Converter	Stereo audio DA converter with a dual PPL built-in.
IC601	TMP94CS40AF	Main Micro Processor	Performs system control for all circuits.
IC201	TC203G08AF	Track Buffer	Rate control and Buffer control.
IC615	MBM29F800TA-55	Flash ROM	Memorization for firmware.

Table 3-5-2 (1/2) ADV7170

Pin No.	Name	Function
1	V_{AA}	Power supply
2 3 4 5 6 7 8 9	P5-P12	8 bit, 4:2:2 Multiplexed Y/Cr/Cb pixel port (P7-P0) or 16 bit Y/Cr/Cb pixel port (P15-P0). P0 represents the LSB.
10	GND	Ground
11	V_{AA}	Power supply
12 13 14	P13-P15	8 bit, 4:2:2 Multiplexed Y/Cr/Cb pixel port (P7-P0) or 16 bit Y/Cr/Cb pixel port (P15-P0). P0 represents the LSB.
15	HSYNC	HSYNC (Modes 1 & 2) control signal. Master Mode: control signal output Slave Mode: control signal acceptance
16	FIELD/ VSYNC	Dual function field (Mode 1) and VSYNC (mode 2) control signal. Master Mode: control signal output Slave Mode: control signal acceptance
17	BLANK	Video blanking control signal. The pixel inputs are ignored when this is logic level "0". This signal is optional.
18	ALSB	TTL address input. This signal set up the LSB of the MPU address.
19	GND	Ground pin
20	V_{AA}	Power supply
21	GND	Ground pin
22	RESET	This pin resets the on-chip timing generator and sets the ADV7170 into default mode. NTSC operation, timing slave mode 0, 8 bit operation, 2 x composite & S VHS OUT.
23	SCLOCK	MPU port serial interface clock input
24	SDATA	MPU port serial data input/output
25	COMP	Compensation pin. Connect a 0.1μF capacitor from COMP to V_{AA}. For optimum dynamic performance in low power mode, the value of the COMP capacitor can be varied as described in low power mode section.

Table 3-5-2 (2/2) ADV7170

Pin No.	Name	Function
26	RED/ CHROMA/V	RED/S-VHS C/V analog output.
27	GREEN/ LUMA/Y	Green/S-VHS Y/Y analog output.
28	V_{AA}	Power supply
29	GND	Ground pin
30	V_{AA}	Power supply
31	BLUE/ CVBS/U	Blue/Composite/U analog output
32	COMPO-SITE (CVBS)	PAL/NTSC composite video output.
33	V_{REF}	Voltage reference input for DACs or voltage reference output.
34	R_{SET}	A 150 ohm resistor connected from this pin to GND is used to control full scale amplitudes of the video signal.
35	SCRESET/ RTC	This pin can be configured as an input by setting MR22 and MR21 of mode register 2. It can be configured as a subcarrier reset pin, in which case a high to low transition on this pin will reset the subcarrier to field 0. Alternately it may be configured as a real time control (RTC) input.
36	TTX REQ	Teletext data request signal Defaults to GND when teletext not selected (enables backward compatibility to ADV7175/ADV7176).
37	TTX V_{AA}	Teletext data Defaults to V_{AA} when teletext not selected (enables backward compatibility to ADV7175A/ADV7176.)
38 39 40 41 42	P0-P4	8 bit, 4:2:2 Multiplexed Y/Cr/Cb pixel port (P7-P0) or 16 bit Y/Cr/Cb pixel port (P15-P0). P0 represents the LSB.
43	GND	Ground pin
44	CLOCK	TTL clock input.

Table 3-5-3 KA3032

Pin No.	Name	Function
1	OUT1	CH1 OP-AMP output
2	IN2.1	CH2 OP-AMP input (+)
3	IN2.2	CH2 OP-AMP input (–)
4	OUT2	CH2 OP-AMP output
5	IN3.1	CH3 OP-AMP input (+)
6 7	GND	Ground
8	IN3.2	CH3 OP-AMP input (–)
9	OUT3	CH3 OP-AMP output
10	IN4.1	CH4 OP-AMP input (+)
11	IN4.2	CH4 OP-AMP input (–)
12	OUT4	CH4 OP-AMP output
13	CTL	CH5 motor speed control
14	FWD1	CH5 forward input
15	REV1	CH5 reverse input
16	SGND	Signal ground
17	OPOUT	OP-AMP output
18 19	GND	Ground
20	OPIN(+)	OP-AMP input (+)
21	IPIN(–)	OP-AMP input (–)
22	MUTE4	CH4 mute
23	MUTE3	CH3 mute
24	MUTE1,2	CH1,2 mute
25	PVCC1	Power supply voltage (for CH5)
26	DO5.2	CH5 drive output
27	DO5.1	CH5 drive output
28	DO4.2	CH4 drive output
29	DO4.1	CH4 drive output
30 31	GND	Ground
32	DO3.2	CH3 drive output
33	DO3.1	CH3 drive output
34	PGND	Power ground
35	DO2.2	CH2 drive output
36	DO2.1	CH2 drive output
37	DO1.2	CH1 drive output
38	DO1.1	CH1 drive output
39	PVCC2	Power supply voltage (for CH1, CH2, CH3, CH4)
40	GEG50	Regulator output
41	REG050	Regulator 5V output
42 43	GND	Ground
44	RES50	Regulator reset
45	SVCC	Signal supply voltage
46	REF	Bias voltage input
47	IN1.1	CH1 OP-AMP input (+)
48	IN1.2	CH1 OP-AMP input (–)

Table 3-5-4 MBM29F800TA-55

Pin No.	Name	Function
1 | 8 16 | 24 25 45 48	A_{-1}, $A_0 - A_{18}$	Address input
29 | 36 38 | 45	$DQ_0 - DQ_{15}$	Data I/O
26	$\overline{CE}$	Chip enable
28	$\overline{OE}$	Output enable
11	$\overline{WE}$	Write enable
12	$\overline{RESET}$	Hardware reset
15	RY/$\overline{BY}$	Ready/busy output
47	$\overline{BYTE}$	8 bit, 16 bit mode switch
27	V_{SS}	Ground
37	V_{CC}	Power supply
9 10 13 14	N.C.	Not connected.

Table 3-5-5 MD36710X (1/5)

Pin No.	Name	Function
Host Interface, CD-DSP interface, Sub ode interface (32 pins)		
	HD [15:12]	When connecting HWID to V_{DD}, become data lines 15:12 of 16 bit host data bus. When connecting HWID to GND, the lines become CD-DSP serial input port pins defined as below.
3	CDERR (HD [15])	CD-DSP data error input
4	CDFRM (HD [14])	CD-DSP LR clock (frame) input
5	CDDAT (HD [13])	CD-DSP data input
6	CDDAT (HD [12])	CD-DSP bit clock input
	HD [11:8]	When connecting HWID to V_{DD}, become data lines 11:8 of 16 bit host data bus. When connecting HWID to GND, the lines become sub code port pins defined as below.
7	SCCLK (HD [11])	Sub code bit clock output
9	SCDAT (HD [10])	Sub code bit clock input
10	SCSYN (HD [9])	Sub code sync signal display input
11	SCFRM (HD [8])	Sub code frame sync input
12 14 | 16 19 | 21	HD [7:0]	8 l.s. host data bus. When connecting HWID to GND, only the 8 l.s. signal is defined as a host data signal. When connecting HWID to V_{DD}, 8 l.s. line is used for of 16 bit data bus.
22 24 25 26	HA [3:0]	Host address input. Inputs address signal that specifies physical address inside MD36710X.
27	HWR# (HR/W#)	Host protocol, type A (HTYPE=GND): HR/W#. Decides direction of host access. Host protocol, type B (HTYPE=V_{DD}): HWR#. Host writing input (active low).
29	HCS#	Host chip select input. Active low.
30	HRD# (HDS#)	Host protocol, type A (HTYPE=GND): HDS#. Data strobe input (active low). Host protocol, type B (HTYPE=V_{DD}): HRD#. Host writing input (active low).
31	HRDY	Host ready output (active high). Use this signal to transmit bit stream via host bus. External pull-up resistor is required. Transmission of CodBurstLen byte length is determined as 1 packet. Check that the signal is active before transmitting each packet. Possible to write the bit stream serially up to CodBurstLen byte to MD36710X.
32	HACK#	Host acknowledge output (active low). Protocol is type A, MD36710X asserts this output and notify completion of reading or writing cycle. If this signal is not active, 3-state condition occurs (External pull-up resistor is required.). If protocol is type B, the signal functions as wait output signal. When high speed host (microprocessor) is used, this signal may not be used.
34	HIRQ#	Interruption requirement (active low). Deassert when host reads interruption status resister of MD36710X. Also deassert after host masks interruption in the interrupt mask resister of MD36710X or reseting. If HIRQ# is not asserted, 3-state condition occurs (External pull-up resistor is required.)

Table 3-5-5 MD36710X (2/5)

Pin No.	Name	Function
35	HWID	Determines data bus width of host interface. It can be changed only during reset. Host interface of MD36710X is set to 8 bit width at low level (GND) and set to 16 bit width at high level (V_{DD}).
36	HORD	Determines byte order for data bus of host interface in 16 bit width setting. (HWID: V_{DD}). It can be changed only during reset. Set MD36710X to obtain I/O signals of m.s. byte in HD [15:8] at low level (GND) and those in HD [7:0] at high level. If HWID is GND level, connect to GND.
37	HTYPE	Determines protocol of host bus. It can be changed only during reset. Sets MD36710X to type A at low level and type B at High level.
130	STNDBY#	Standby input (active low). All output pins and bidirectional pins become float state if asserting with RESET# and MD36710X is cut electrically from peripheral circuits. All internal operation stop and power consumption is confined to the minimum. Contents of SDRAM are not stored at stanby.
141	RESET#	Reset input (active low). Initializing process of MD36710X starts at the time deasserting is carried out from assert state.
142	IDLE	Idle, init or reset states display output (active high).
GPI/O signal (4 pins)		
2	GPSI	General input controlled by DVP micro code.
122 123	GPAI/O [1:0]	General bidirectional pin controlled by ADP micro code. After resetting, this pin is defined as an input pin. ADP command specifies the setting.
159	GPSO	General output conrolled by DVP micro code.
PLL signal (6 pins)		
126	GCLK1	Master clock input for audio. Must be connected to GCLK for usual operation.
128	XO	Output to the crystal connected to GCLK. If the crystal is not used for GCLK, XO is not connected.
129	GCLK	Clock for main processor or crystal input.
135 137	PLLCFG [1:0]	PLL configuration input. It can be changed only during reset. Both pins must be connected to GND (digital) for usual operation.
136	PLLCA	Capacitor connection pin for PLL. Connect the other terminal of the capacitor to PLLGND.

Table 3-5-5 MD36710X (3/5)

Pin No.	Name	Function
Digital video port (24 pins)		
84	VCLK	VCLKx2 signal is divided by 2. Used as a qualifier of data and sync signal.
85	VMASTER	Video master/slave selection input. At high level, video sync in MD36710X enters master mode. (Video sync and clock signals are developed.) After low level, video sync enters slave mode. (Video sync and clock signals are entered.) Only during reset, setting of terminal can be changed.
87	VDEN#	Video enable input (active low). When active, MD 36710X develops video data. When deasserting, pixel output becomes 3-state condition. (But sync and clock signals are kept to be active.) Input is changeable at any time but becomes effective at the next VCLKx2.
89	VSYNC	Vertical sync bidirectional signal pin. Polarity and length are programmable.
90	HSYNC	Horizontal sync bidirectional signal pin. Polarity and length are programmable.
91	FI	Field identification bidirectional signal pin. Polarity is programmable.
92 94 | 97 99 | 101	Y [7:0]	At 16 bit video mode (Video 8=0), develop luminance signals. At 8 bit mode (Video 8=1), develop luminance and color difference signals multiplexed in time sequence according to the ITU-R656 standard (in no relation to presence of SAV and EAV sync code).
98	CBLANK	Composite blank output. Waveforms are programmable other than polarity.
102 104 105	C [7:0]	At 16 bit video mode (Video 8=0), develop color difference signal. At 8 bit mode (Video 8=1), m.s. line 3 pin (c [7:5]) is not used, l.s.5 pin (C [4:0]) is used as input from external OSD device.
106	OSDPLT (C [4])	On-chip OSD palette selector. Selects OSD Palette0 at low level and OSD Plette1 at high level.
107 109 | 111	OSDPEL [3:0] (C [3:0])	OSD pixel input. Used as an entry signal to on-chip OSD palette.
124	VCLKx2	Main video clock input or output.
Digital audio port (8 pins)		
112	AIN	Serial input of PCM stereo audio for ADC
114 115 116	AOUT [2:0]	Serial output of PCM stereo audio for DAC. After reset, develop signals of low level. Only AOUT [0] supports 24 bit sample width.
117	S/PDIF (AOUT [3])	S/PDIF transmitter output. Possible to connected to DAC as the forth audio output (AOUT [3]). After reset, develop signal of low level.
118	ALRCLK	LR clock output of AOUT [3..0] and AIN. Becomes square waveform in sampling frequency. Polarity of LR is programmable.
119	ABCLK	Bit clock output of AOUT [3..0] and AIN. At rising/falling edges (programmable) AOUT is developed and AIN is latched.

Table 3-5-5 MD36710X (4/5)

Pin No.	Name	Function
132	AMCLK	Audio master clock I/O. 384 fs, 256 fs, 192 fs and 128 fs of sampling frequency can be selected (programmable).
DVD-DSP interface (13 pins)		
143	DVDERR	DVD-DSP error input (Polarity programmable)
144	DVDSOS	DVD-DSP data selector start input (Polarity programmable)
146	DVDVALID	DVD-DSP data effective input (Polarity programmable)
147	DVDSTRB	DVD-DSP data bit strobe (clock) input. Polarity programmable.
148	DVDREQ	DVD-DSP data requirement output (Polarity programmable)
149 151 | 154 156 | 158	DVDDAT [7:0]	DVD-DSP data input bus
SDRAM interface (35 pins)		
38 39 42 | 47 49 | 52	RAMADD [11:0]	SDRAM address bus output
54	RAMCS0#	SDRAM chip select (active low) output. Lower bit for 2 Mbyte device.
55	RAMCS1#	SDRAM ship select (active low). Upper bit for 2 Mbyte device.
56	RAMRAS#	Row selection of SDRAM (active low) output
57	PCLK	SDRAM clock output (same as internal process clock).
59	RAMCAS#	Column selection of SDRAM (active high) output
60	RAMWE#	SDRAM write enable (active low) output
61	RAMDQM	SDRAM data masking (active high) output
62 64 | 67 69 | 72 74 | 79 82	RAMDAT [15:0]	SDRAM bidirectional data bus
TEST signal (3 pins)		
83	TESTMODE	Test pin. Connects to V_{DD} for normal.
127	SCNENBL	Test pin. Connects to GND for normal.
139	ICEMODE	Test pin. Connects to V_{DD} for normal.

Table 3-5-5 MD36710X (5/5)

Pin No.	Name	Function
Power signal (35 pins)		
1 40 41 53 68 80 81 93 108 120 121 125 131 145 160	GND	Digital GND
8 28 33 48 58 63 73 86 78 113 133 140 150 155	VDD	Digital power supply (3.3V)
134	PLLGND (GNDA)	GND of internal PLL circuit
138	PLLV_{DD} (V_{DD}A)	Power supply of internal PLL circuit

Table 3-5-6 PCM1727

Pin No.	Name	Function
1	XT1	PLL master clock input or crystal connector terminal
2	PGND	PLL GND
3	V_{CP}	PLL power supply
4	MCKO	Master clock buffer output
5	RSV	Not connected. Use the pin with open.
6	SCKO3	PLL-2 generation system clock output.
7	ML	Serial control data enable input.(1)
8	MC	Serial control data clock input.(1)
9	MD	Serial control data, data input.(1)
10	$\overline{RSTB}$	External reset input, reset at L.(1)
11	V_{OUT}R	Rch analog audio output
12	AGND	Analog GND
13	V_{CA}	Analog power supply
14	V_{OUT}L	Lch analog audio output
15	CAP	Internal analog bias (connected with a bypass capacitor)
16	$\overline{ZERO}$	Infinity zero detection output.(2)
17	BCK	PCM audio data, bit clock input.(3)
18	DATA	PCM audio data, data input.(3)
19	LRCK	PCM audio data, LRCK input (f_S)(3)
20	SCKO2	PLL-1 generation system clock output
21	SCKO1	PLL-1 generation system clock output
22	V_{DD}	Digital power supply
23	DGND	Digital GND
24	XT2	Crystal oscillator connection terminal, connected to GND at external clock input.

Note:
(1) With internal pull-up. Schmitt trigger input.
(2) Open drain output.
(3) Schmitt trigger input.

Table 3-5-7 S-24C01AFJ-TB-01

Pin No.	Name	Function
1	A0	Address input
2	A1	Address input
3	A2	Address input
4	GND	Ground
5	SDA	Serial data I/O
6	SCL	Serial clock input
7	TEST	Connect to GND.
8	V_{CC}	Power supply

Table 3-5-8 (1/2) TA1293F

Pin No.	Name	Function
1	GNDP	GND terminal
2	LDO2	Drive terminal
3	MDI2	Monitor terminal
4 5	NC	—
6	VrA	Analog V_{REF}
7	Vrfi	Filter capacity for reference
8	VrD	Digital V_{REF}
9	Vdd	Power supply terminal
10	DPAC	DPD AC coupling capacity 1
11	DPBD	DPD AC coupling capacity 2
12	DPD1	DPD integration capacity 1
13	DPD2	DPD integration capacity 2
14	SCB	Control line (bit clock)
15	SCL	Control line (latch signal)
16	SCD	Control line (serial data)
17	VRCK	Reference clock input
18 19	NC	—
20	VCKF	Capacity for time constant adjustment
21	VccP	Power supply terminal
22 23 24 25	NC	—
26	RFSW	RFO control terminal
27	VccS	Power supply terminal
28 29 30	NC	—
31	LVL	Servo addition output
32	NC	—
33	TEO	TE output
34	FEO	FE output
35 36 37 38 39	NC	—
40	DFTN	DPD defect
41	RPZ	RF ripple center output
42	RPO	RF ripple output
43	RPB	Bottom of RF ripple
44	RPP	Peak of RF ripple
45	RFO	Equivalent RF output
46	VccR	Power supply terminal (RF)
47	DPDB	Pit depth adjustment
48	TEB	TE balance
49	FEB	FE balance
50	PSC	VRCK dividing ON/OFF
51	VccO	Power supply terminal
52	Vcc2	Power supply terminal
53	NC	—
54	EQD	Group delay correction
55	GND2	GND terminal

Table 3-5-8 (2/2) TA1293F

Pin No.	Name	Function
56	RFDC	DC feed back capacity
57	EQB	Boost adjustment
58	EQF	Frequency adjustment
59	MDI1	Monitor input
60	LDO1	Drive output
61	P1TN	TE– input (DVD)
62	P1TP	TE+ input (DVD)
63	P1FN	FE– input (DVD)
64	P1FP	FE+ input (DVD)
65	LDP1	APC polarity 1
66	GNDR	GND terminal
67	P1DI	D input (DVD)
68	P1CI	C input (DVD)
69	P1BI	B input (DVD)
70	P1AI	A input (DVD)
71	LDP2	APC polarity 2
72	P2AI	A input (CD)
73	P2BI	B input (CD)
74	P2CI	C input (CD)
75	P2DI	D input (CD)
76	GNDS	GND terminal
77	P2FP	FE+ input (CD)
78	P2FN	FE– input (CD)
79	P2TP	TE+ input (CD)
80	P2TN	TE– input (CD)

Table 3-5-9 (1/4) TC9453F

Pin No.	Name	Function
1 2	NC	—
3	DVSS	Exclusive ground for DAC
4	RO	R-ch output signal
5	DVDD	Exclusive power supply for DAC
6	DVR	Amplifier reference signal output
7	LO	L-ch output signal
8	DVSS	Exclusive ground for DAC
9	XVSS	Exclusive ground for oscillator
10	XI	Crystal oscillation input
11	XO	Crystal oscillation output
12	XVDD	Exclusive power supply for oscillator
13 14 15	TESM0 TESM1 TESM2	Test terminal
16	VDD3	Digital power supply
17	VSS3	Digital ground
18	VPFC	Clock PLL phase/frequency comparison output
19	TEST0	Test mode terminal
20	VLPFI	VCO filter input for clock PLL
21	VLPFO	VCO filter output for clock PLL
22	VSS3	Digital ground
23 24 25 26 27 28 29 30 31 32	MON0 MON1 MON2 MON3 MON4 MON5 MON6 MON7 MON8 MON9	Test monitor
33	VDD3	Digital power supply
34 35	NC	—
36	TEST1	Test mode terminal
37	FLGA	General I/O or flag monitor
38	FLGB	General I/O or flag monitor
39	VSS3	Digital ground
40	/RST	Reset terminal
41	/MA	Microprocessor address enable signal
42	/MRD	Microprocessor data read signal
43	/MWR	Microprocessor data write signal
44	/MCE	Microprocessor chip enable signal
45	/MINT	Microprocessor interrupt signal
46 47 48 49 50 51 52 53	MD0 MD1 MD2 MD3 MD4 MD5 MD6 MD7	Microprocessor data bus
54	VDD5	Power supply
55 56	NC	—
57	SMCK	Clock output
58	VMCK	Data output (signal process) clock output

Table 3-5-9 (2/4) TC9453F

Pin No.	Name	Function
59	VDD3	Digital power supply
60	PD0	DVD/CD data output
61	VSS5	Ground
62 63 64 65	PD1 PD2 PD3 PD4	DVD/CD data output
66	VSS3	Digital ground
67 68 69 70	PD5 PD6 PD7 PD8	DVD/CD data output
71	/PSYC	DVD data sector sync signal
72	/PDRQ	DVD data transfer block
73	PDCK	DVD data transfer clock
74	VDD5	Power supply for 5V
75	TESM3	Test terminal
76	DIGI	1 bit DAC digital IN input
77	TESM4	Test terminal
78	VDD3	Digital power supply
79 80 81 82	BA0 BA1 BA2 BA3	External RAM address output
83	VSS5	Ground
84 85 86 87 88	BA4 BA5 BA6 BA7 BA8	External RAM address output
89	VDD3	Digital power supply
90	/BOE	External RAM/OE signal
91	/BRAS	External RAM/RAS signal
92	/BCAS	External RAM/CAS signal
93	/BWL	External RAM Lower/WE signal
94	/BWU	External RAM Upper/WE signal
95	VDD5	Power supply
96 97 98 99 100 101 102 103 104	BD0 BD1 BD2 BD3 BD4 BD5 BD6 BD7 BD8	External RAM data I/O
105	VSS3	Digital ground
106 107 108 109	BD9 BD10 BD11 BD12	External RAM data I/O
110	VSS5	Ground
111 112 113	BD13 BD14 BD15	External RAM data I/O
114 115	NC	—
116	VDD3	Digital power supply
117	PLCK	PLL clock I/O

Table 3-5-9 (3/4) TC9453F

Pin No.	Name	Function
118 119 120 121	TESM5 TESM6 TESM7 TESM8	Test terminal
122	VSS3	Digital ground
123	CFC1	VCO frequency control signal
124	CFC2	VCO frequency control signal
125	PPW	Phase comparator offset adjustment voltage output
126	PESV	Phase comparator offset adjustment signal input
127	PVSS	Exclusive ground for PLL
128	PESP	Phase comparator offset adjustment signal output
129	PDOP1	DVD/CD phase control signal (Positive polarity)
130	PDON1	DVD/CD phase control signal (Negative polarity)
131	PDOP2	DVD/CD phase control signal (Positive polarity)
132	PDON2	DVD/CD phase control signal (Negative polarity)
133	LPFN	Data PLL low pass filter inverted input
134	LPFO	Data PLL low pass filter output
135	PVREF	Exclusive reference power supply for data PLL
136	VCOREF	VCO reference
137	VCOF	VCO automatic adjustment filter output
138	PVDD	Exclusive power supply for PLL
139	SLCO1	Data slice 6 bit DAC output
140	TESM9	Test terminal
141	TEST2	Test mode terminal
142	RFCD	CD RF signal input
143	RFDVD	DVD RF signal input
144	AVDD	Exclusive power supply for analog
145	RFCT	RFRP center voltage input (zero cross)
146	RFZI	RFRP signal input (zero cross)
147	TEZI	Tracking error signal input (zero cross)
148	AWIN	Active wide PLL control signal input
149	AVSS	Exclusive ground for analog
150	FEI	Focus error signal input
151	TEI	Tracking error signal input
152	RFSB	RF level or sub beam signal addition input
153	RFRP	RFRP signal input
154	AVSS	Exclusive ground for analog
155	TESM10	Test terminal
156	EXTAD	General external ADC input
157	VREF	Exclusive reference power supply for analog
158	FOO	Focus EQ output
159	TRO	Tracking EQ output
160	AVDD	Exclusive power supply for analog
161	AWCTL	Active wide PLL control output
162	FMO	Focus EQ output
163	DMO	Disc EQ output

Table 3-5-9 (4/4) TC9453F

Pin No.	Name	Function
164	TEBC	Tracking balance control signal
165	FEBC	Focus balance control signal
166	DPDC	DPD error signal pit depth adjustment signal
167	EQBC	RF wide range boost adjustment signal
168	ANMON	General PWM output
169	/DFCT	Black dot detection signal
170	VRCK	RF EQ characteristic control clock
171	VSS3	Digital ground
172	SCD	Head amplifier serial data
173	SCL	Head amplifier serial data latch pulse
174	SCB	Head amplifier serial data clock
175	FGIN	Disc FG signal input (with self-bias circuit)
176	NC	—

* " / " indicated at the head of pin name means active "L" pin.

Table 3-5-10 (1/5) TMP94CS40AF

Pin No.	Name	Function
77 | 84	P00 – P07 D0 – D7	Port 0: I/O port. Data 0–7: data bus 0–7. Function is selectable by setting of AM0/1 terminal. It becomes high impedance at no external memory access.
86 | 93	P10 – P17 D8 – D15	Port 1: I/O port. Data 8–15: data bus 8–15. Function is selectable by setting of AM0/1 terminal. It becomes high impedance at no external memory access.
95 | 102	P20 – P27 D16 – D23	Port 2: I/O port. Data 16–23: data bus 16–23. Function is selectable by setting of AM0/1 terminal. It becomes high impedance at no external memory access.
104 | 111	P30 – P37 D24 – D31	Port 3: I/O port. Data 24–31: data bus 24–31. Function is selectable by setting of AM0/1 terminal. It becomes high impedance at no external memory access.
113 | 120	P40 – P47 A0 – A7	Port 4: I/O port. Address 0–7: address bus 0–7. Function is selectable by setting of AM0/1 terminal. Signal does not change at no external memory access.
122 | 129	P50 – P57 A8 – A15	Port 5: I/O port. Address 8–15: address bus 8–15. Function is selectable by setting of AM0/1 terminal. Signal does not change at no external memory access.
131 | 138	P60 – P67 A16 – A23	Port 6: I/O port. Address 16–23: address bus 16–23. Function is selectable by setting of AM0/1 terminal. Signal does not change at no external memory access.
75	P70 $\overline{RD}$	Port 70: output port. (Initializes to "1" output.) Read: strobe signal reading external memory. Function is selectable by setting of AM0/1 terminal. Strobe signal is not developed at no external memory access.
74	P71 $\overline{WRLL}$	Port 71: output port. (Initializes to "1" output.) Write: strobe signal writing D0–D7 of external memory. Strobe signal is not developed at no external memory access.
73	P72 $\overline{WRLH}$	Port 72: output port. (Initializes to "1" output.) Write: strobe signal writing D8–D15 of external memory. Strobe signal is not developed at no external memory access.
72	P73 $\overline{WRHL}$	Port 73: output port. (Initializes to "1" output.) Write: strobe signal writing D16–D23 of external memory. Strobe signal is not developed at no external memory access.
71	P74 $\overline{WRHH}$	Port 74: output port. (Initializes to "1" output.) Write: strobe signal writing D24–D31 of external memory. Strobe signal is not developed at no external memory access.

Table 3-5-10 (2/5) TMP94CS40AF

Pin No.	Name	Function
70	P75 $\overline{BUSRQ}$	Port 75: I/O port. Bus request: signal with memory interface terminal requested to be high impedance. The following pins become high impedance, but no change is made when used as a port. A0 – A23, D0 – D31, $\overline{RD}$, $\overline{WRLL}$, $\overline{WRLH}$, $\overline{WRHL}$, $\overline{WRHH}$, $\overline{CS0}$ – $\overline{CS5}$, $\overline{OE0}$ – $\overline{OE1}$, $\overline{WE0}$–$\overline{WE1}$, $\overline{RAS}$ group, $\overline{CAS}$ group
69	P76 $\overline{BUSAK}$	Port 75: output port. (Initializes to "1" output.) Bus acknowledge: signal, that indicates request of $\overline{BUSRQ}$ received.
67	P80 $\overline{CS0}$	Port 80: output port. (Initializes to "1" output.) Chip select 0: "L" level is developed if address is within the assigned address range.
66	P81 $\overline{CS1}$ $\overline{RAS0}$	Port 81: output port. (Initializes to "1" output.) Chip select 1: "L" level is developed if address is within the assigned address range. Low address strobe 0: $\overline{RAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
65	P82 $\overline{CS2}$	Port 82: output port. (Initializes to "0" output.) Chip select 2: "L" level is developed if address is within the assigned address range.
64	P83 $\overline{CS3}$ $\overline{RAS1}$	Port 83: output port. (Initializes to "1" output.) Chip select 3: "L" level is developed if address is within the assigned address range. Low address strobe 1: $\overline{RAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
63	P84 $\overline{CS4}$	Port 84: output port. (Initializes to "1" output.) Chip select 4: "L" level is developed if address is within the assigned address range.
62	P85 $\overline{CS5}$	Port 85: output port. (Initializes to "1" output.) Chip select 5: "L" level is developed if address is within the assigned address range.
49	P86 $\overline{WAIT}$	Port 86: I/O port. Wait: Bus wait request signal
60	PA0 $\overline{CAS0}$ $\overline{LCAS0}$	Port A0: output port. (Initializes to "1" output.) Column address strobe 0: $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range. Lower column address strobe 0: lower $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
59	PA1 $\overline{UCAS0}$	Port A1: output port. (Initializes to "1" output.) Upper column address strobe 0: upper $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
58	PA2 $\overline{OE0}$	Port A2: output port. (Initializes to "1" output.) Out enable 0: out enable signal for DRAM is developed.
57	PA3 $\overline{OE1}$	Port A3: output port. (Initializes to "1" output.) Out enable 1: out enable signal for DRAM is developed.
56	PA4 $\overline{WE0}$	Port A4: output port. (Initializes to "1" output.) Write enable 0: write enable signal for DRAM is developed.

Table 3-5-10 (3/5) TMP94CS40AF

Pin No.	Name	Function
55	PB0 $\overline{CAS1}$ $\overline{LCAS1}$ $\overline{LLCAS1}$	Port B0: output port. (Initializes to "1" output.) Column address strobe 1: $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range. Lower column address strobe 1: lower $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range. Lower-lower column address strobe 1: lower-lower $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
54	PB1 $\overline{UCAS1}$ $\overline{LUCAS1}$	Port B1: output port. (Initializes to "1" output.) Upper column address strobe 1: upper $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range. Lower-upper column address strobe 1: lower-upper $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
53	PB2 $\overline{HLCAS1}$	Port B2: output port. (Initializes to "1" output.) Upper-lower column address strobe 1: upper lower $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
52	PB3 $\overline{HUCAS1}$	Port B3: output port. (Initializes to "1" output.) Upper-upper column address strobe 1: upper-upper $\overline{CAS}$ strobe signal for DRAM is developed if address is within the assigned address range.
51	PB4 $\overline{WE1}$	Port B4: output port. (Initializes to "1" output.) Write enable 1: write enable signal for DRAM is developed.
140	PC0 TO1 TO7	Port C0: I/O port. Timer output 1: 8 bit timer 0 or timer 1 is developed. Timer output 7: 16 bit timer 7 is developed.
141	PC1 TO3 TOB	Port C1: I/O port. Timer output 3: 8 bit timer 2 or timer 3 is developed. Timer output B: 16 bit timer B is developed.
17	PD0 TO4	Port D0: I/O port. Timer output 4: 16 bit timer 4 is developed.
18	PD1 TI4 INT4	Port D1: I/O port. Timer input 4: 16 bit timer 4 is entered. Interrupt request terminal 4: programmable at rising/falling edges.
19	PD2 TI5 INT5	Port D2: I/O port. Timer input 5: 16 bit timer 4 is entered. Interrupt request terminal 5: Interrupt request terminal at rising edge.
20	PD4 TO6	Port D4: I/O port Timer output 6: 16 bit timer 6 is developed.
21	PD5 TI6 INT6	Port D5: I/O port. Timer input 6: 16 bit timer 6 is entered. Interrupt request terminal 6: programmable at rising/falling edges.
22	PD6 TI7 INT7	Port D6: I/O port. Timer input 7: 16 bit timer 6 is entered. Interrupt request terminal 7: Interrupt request terminal at rising edge.
24	PE0 TO8	Port E0: I/O port. Timer output 8: 16 bit timer 8 is developed.
25	PE1 TI8 INT8	Port E1: I/O port. Timer input 8: 16 bit timer 8 is entered. Interrupt request terminal 8: programmable at rising/falling edges.
13	PE2 TI9 INT9	Port E2: I/O port. Timer input 9: 16 bit timer 8 is entered. Interrupt request terminal 9: Interrupt request terminal at rising edge.

Table 3-5-10 (4/5) TMP94CS40AF

Pin No.	Name	Function
14	PE4 TOA	Port E4: I/O port. Timer output A: 16 bit timer A is developed.
15	PE5 TIA INTA	Port E5: I/O port. Timer input A: 16 bit timer A is entered. Interrupt request terminal A: programmable at rising/falling edges.
16	PE6 TIB INTB	Port E6: I/O port. Timer input B: 16 bit timer A is entered. Interrupt request terminal B: Interrupt request terminal at rising edge.
24	PF0 TXD0	Port F0: I/O port. Serial transfer data 0 (open drain output capability)
25	PF1 RXD0	Port F1: I/O port. Serial reception data 0
26	PF2 $\overline{CTS0}$ SCLK0	Port F2: I/O port. Serial transfer capability 0 Serial clock I/O 0
27	PF4 TXD1	Port F4: I/O port. Serial transfer data 1 (open drain output capability)
28	PF5 RXD1	Port F5: I/O port. Serial reception data 1
29	PF6 $\overline{CTS1}$ SCLK1	Port F6: I/O port. Serial transfer capability 1 Serial clock I/O 1
152 | 159	AN0 – AN7	Analog input: input of 10 bit A/D converter.
6	PH0 TC0	Port H0: I/O port. Terminal count 0: Strobe output signal is developed at "H" level when count value of micro DMA channel 0 is 0.
7	PH1 TC1	Port H1: I/O port. Terminal count 1: Strobe output signal is developed at "H" level when count value of micro DMA channel 1 is 0.
8	PH2 TC2	Port H2: I/O port. Terminal count 2: Strobe output signal is developed at "H" level when count value of micro DMA channel 2 is 0.
9	PH3 TC3	Port H3: I/O port Terminal count 3: Strobe output signal is developed at "H" level when count value of micro DMA channel 3 is 0.
10	PH4 INT0	Port H4: I/O port (schmitt input) Interrupt request terminal 0: programmable at level/rising edge. (Schmitt input)
31	$\overline{NMI}$	Nonmaskable interrupt request terminal: interrupt request terminal at falling edge. Available at rising edge by using a program.
32	$\overline{WDTOUT}$	Watchdog timer output terminal
4 5	AM0,1	Address mode: selects start-up external data bus width after releasing reset. AM1= "0" AM0= "0": starts with 8 bit external data bus AM1= "0" AM0= "1": starts with 16 bit external data bus AM1= "1" AM0= "0": starts with 32 bit external data bus AM1= "1" AM0= "1": starts from internal ROM
43 48	TEST0,1	Test: used with "GND" fixed.
36	CLK	Clock: develops system clock.
38 40	X1/X2	Oscillation connection terminal

Table 3-5-10 (5/5) TMP94CS40AF

Pin No.	Name	Function
33	$\overline{\text{RESET}}$	Reset: initializes device (with pull-up resistance) (schmitt input)
160	VREFH	Reference voltage input terminal (H) for 10 bit A/D converter
1	VREFL	Reference voltage input terminal (L) for 10 bit A/D converter
4	ADVCC	10 bit A/D converter power supply terminal
2	ADVSS	10 bit A/D converter GND terminal
37	CLVCC	Power supply terminal for clock doubler
39	CLVSS	GND terminal for clock doubler
30	DVCC	Digital power supply terminal
23	DVSS	Digital GND terminal

5-3-2. Main Circuit Diagram

Part No.	Location
C201	A6
C202	B6
C203	C6
C204	B8
C205	A7
C301	G8
C302	G8
C303	F9
C304	E9
C305	E9
C306	E8
C307	G8
C308	E10
C309	E10
C310	F11
C311	F11
C312	F10
C313	F11
C314	F10
C315	F10
C316	H12
C317	B8
C318	C8
C319	C9
C320	E10
C321	B10
C322	G10
C323	E11
C335	F11
C336	F11
C337	G12
C338	G12
C339	G11
C340	H11
C341	H12
C344	G11
C345	G11
C347	C9
C349	A9
C350	A9
C351	B11
C352	C11
C501	B1
C502	B1
C503	B1
C504	A2
C505	A2
C506	A2
C507	A2
C508	A2
C509	A2
C510	A3
C511	A3
C512	A3
C513	C2
C514	C2
C515	C2
C516	C2
C517	C2
C518	C2
C519	C2
C520	C2
C521	C2
C522	C2
C523	C3
C524	B3
C525	B3
C526	B3
C527	B3
C528	B3
C529	B3
C530	B3
C531	A4
C532	B4
C533	B4
C534	B4
C535	B4
C536	B4
C537	B4
C538	B4
C539	B4
C540	B3
C541	B4
C542	B4
C543	C4
C544	C4
C545	C3
C546	C3
C547	C4
C548	C4
C549	C4
C550	C4
C551	C4
C552	C4
C553	C4
C554	C4
C555	C4
C556	C4
C557	C4
C558	D5
C559	D5
C560	D5
C561	C6
C562	C6
C563	B6
C564	B6
C565	A6
C566	B6
C567	B6
C568	B5
C569	A5
C570	A5
C571	A5
C572	A5
C573	A5
C574	B5
C575	B5
C576	B4
C577	B4
C578	B4
C579	B4
C580	A4
C581	C2
C582	C1
C583	D2
C584	D2
C585	D2
C586	C2
C587	C1
C588	D5
C590	B4
C591	C6
C592	C3
C593	C3
C594	B6
C601	E2
C602	H4
C603	G2
C604	G2
C605	G3
C606	E3
C607	E3
C608	G2
C609	G2
C610	G10
C611	E2
C615	E3
C616	F1
C617	G1
C618	G1
C619	G1
C621	H3
C622	H12
C623	H12
C624	H12
C901	A11
C902	A11
C903	A11
C904	A11
C905	A11
C906	B11
C907	A10
C908	A10
C909	A11
C910	B12
C911	A11
C912	A11
C913	A11
C914	B11
CN301	F12
CN302	D12
CN501	B1
CN502	C1
CN503	C1
CN601	E1
CN602	F1
CN603	E1
CN801	G12
CN901	B12
E20	G2
E303	F12
E304	F12
E305	F12
E306	F12
E307	F12
E308	F12
E309	F12
E310	F12
E311	F12
E312	F12
E313	F12
E314	F12
E315	F10
E316	F10
E317	F10
E318	F10
E319	F10
E320	F10
E321	F10
E322	F10
E323	F10
E324	F12
E326	E12
E327	E12
E328	E12
E329	E12
E330	B11
E331	C11
E332	E12
E333	D12
E334	D12
E335	D12
E336	D12
E337	D12
E338	E12
E339	E12
E340	B11
E341	E12
E501	A2
E502	B6
E503	B6
E504	C6
E522	A2
E523	A2
E524	A1
E525	B1
E526	B1
E527	B1
E528	B1
E529	B1
E530	B1
E531	B1
E532	B1
E533	B1
E534	B1
E535	B1
E536	B1
E537	B1
E538	B1
E539	B1
E540	B1
E541	B1
E542	C1
E543	C1
E544	C1
E545	C1
E546	C1
E547	D1
E548	D1
E549	D1
E550	D1
E551	D1
E552	D1
E553	D1
E554	D1
E555	C2
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E557	B3
E558	B3
E559	B3
E560	B3
E561	B4
E562	C4
E563	D4
E564	D4
E565	D4
E566	D4
E567	D4
E568	C5
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E574	D5
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E582	C6
E583	B5
E584	B5
E585	B5
E586	B5
E587	D2
E588	D2
E589	D2
E590	C2
E591	C2
E592	C2
E593	C1
E594	C2
E595	C2
E596	D2
E597	D2
E598	A1
E599	B1
E601	E1
E602	E1
E603	E1
E604	F1
E605	F1
E606	F1
E607	F1
E608	G1
E609	G1
E610	G1
E611	G1
E612	G1
E613	G1
E614	G1
E615	G1
E616	F1
E617	E4
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E619	F2
E620	F2
E621	G2
E622	F2
E623	G2
E624	G2
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E626	G2
E628	G2
E629	G2
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E640	F4
E641	F4
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E645	E2
E646	E2
E647	E2
E648	E2
E649	G3
E801	G12
E802	G12
E803	G12
E804	G12
E805	G12
E806	G12
E807	H12
E808	H12
E810	H12
E811	H12
E812	H12
E813	H12
E814	H12
E815	G12
E816	G11
E817	G11
E818	G11
E819	H11
E901	B12
E902	B12
E903	C12
E904	C12
E905	C12
E906	C12
E907	C12
E908	C12
E909	C12
E910	C12
E911	C12
E912	C12
E913	C12
E914	C12
E915	C12
E916	C12
E917	C12
E918	C12
E919	C12
E920	C12
E921	C12
E922	C12
E923	C12
E924	C12
E925	C12
E926	A11
FL301	G12
FL302	G12
FL303	G11
FL304	G12
FL305	H12
FL308	F11
FL501	C3
FL502	C3
IC201	B7
IC202	A7
IC301	B9
IC302	C10
IC305	C8
IC306	F10
IC307	E10
IC308	E11
IC309	F9
IC310	G9
IC311	B10
IC312	B11
IC313	B11
IC314	B11
IC501	B2
IC502	C5
IC503	A5
IC504	C2
IC506	C2
IC507	A4
IC508	C3
IC601	F3
IC602	G1
IC607	G2
IC613	E1
IC614	H2
IC615	H5
IC616	E4
IC617	G10
IC618	H6
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IC902	A12
IC903	A10
IC904	A10
JP301	C8
JP601	F4
Q501	A2
Q502	A2
Q503	D4
Q601	G4
R201	C7
R301	F11
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R306	F11
R307	F11
R308	F11
R309	F11
R310	F11
R311	C10
R312	C12
R313	C10
R314	B10
R315	F10
R316	E12
R317	E12
R319	F11
R320	A9
R321	A9
R323	G10
R324	G10
R325	B11
R326	E12
R327	E12
R328	F12
R329	A9
R401	C2
R415	G4
R450	C4
R451	D4
R452	D3
R501	A4
R502	A2
R503	A2
R504	A2
R505	A2
R506	B1
R507	B1
R508	B2
R509	B2
R510	B1
R511	B1
R513	C2
R514	C2
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R546	C4
R547	C4
R548	C4
R549	C4
R550	C4
R551	C4
R552	C4
R553	D4
R554	D5
R555	D5
R556	D5
R557	D5
R558	D5
R559	D5
R560	C6
R561	B6
R562	B6
R563	B6
R564	B5
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R613	E2
R614	F1
R615	G2
R616	F1
R617	G1
R618	H11
R619	G3
R620	G10
R621	E3
R622	F2
R623	F2
R624	F2
R625	F1
R626	F2
R628	G2
R629	E3
R630	E2
R631	E3
R632	E3
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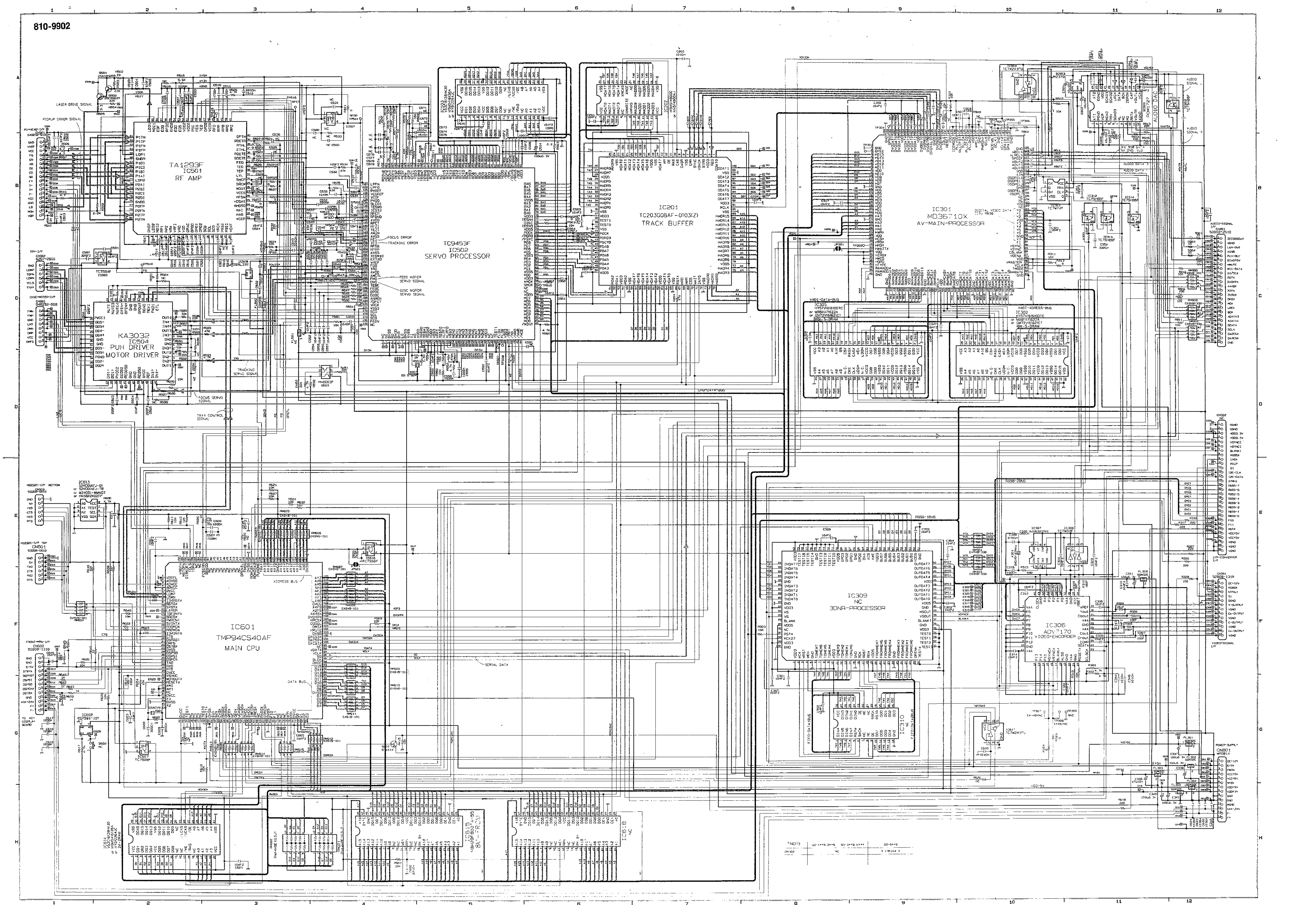
R642	G1
R643	G1
R644	G1
R645	F1
R646	F2
R901	B12
R902	A10
R903	C12
R904	C12
R905	C12
R906	C12
R907	C12
R908	A10
R909	A10
R910	A10
R911	C12
R912	A10
R913	A11
R914	B11
R915	B11
R916	B11
RM303	F10
RM304	E10
RM601	H4
RM602	H3
RM603	E3
RM604	F1
RM605	E3
RM606	E4
RM607	F4
RM608	F4
RM609	F4
RM610	G4
RM611	G4
RM612	G4
RM613	G3
RM614	G3
RM615	G3
RM903	C12
RM904	C12
RM905	C12
S602	G2
SD0	B8
SD1	B8
SD2	B8
SD3	B8
SD4	B8
SD5	B8
SD6	B8
SD7	B8
TP301	B9
TP302	C9
TP303	A9
TP304	A9
TP305	A10
TP306	A10
TP307	G10
TP308	G10
TP309	G11
TP501	A4
TP502	B4
TP503	B4
TP504	B4
TP505	C4
TP506	C3
TP507	D5
TP508	D5
TP509	C6
TP510	C6
TP511	B5
TP512	C2
TP513	B4
TP514	B4
TP515	A3
TP516	A3
TP517	C4
X301	E10
X501	D4
X601	G2

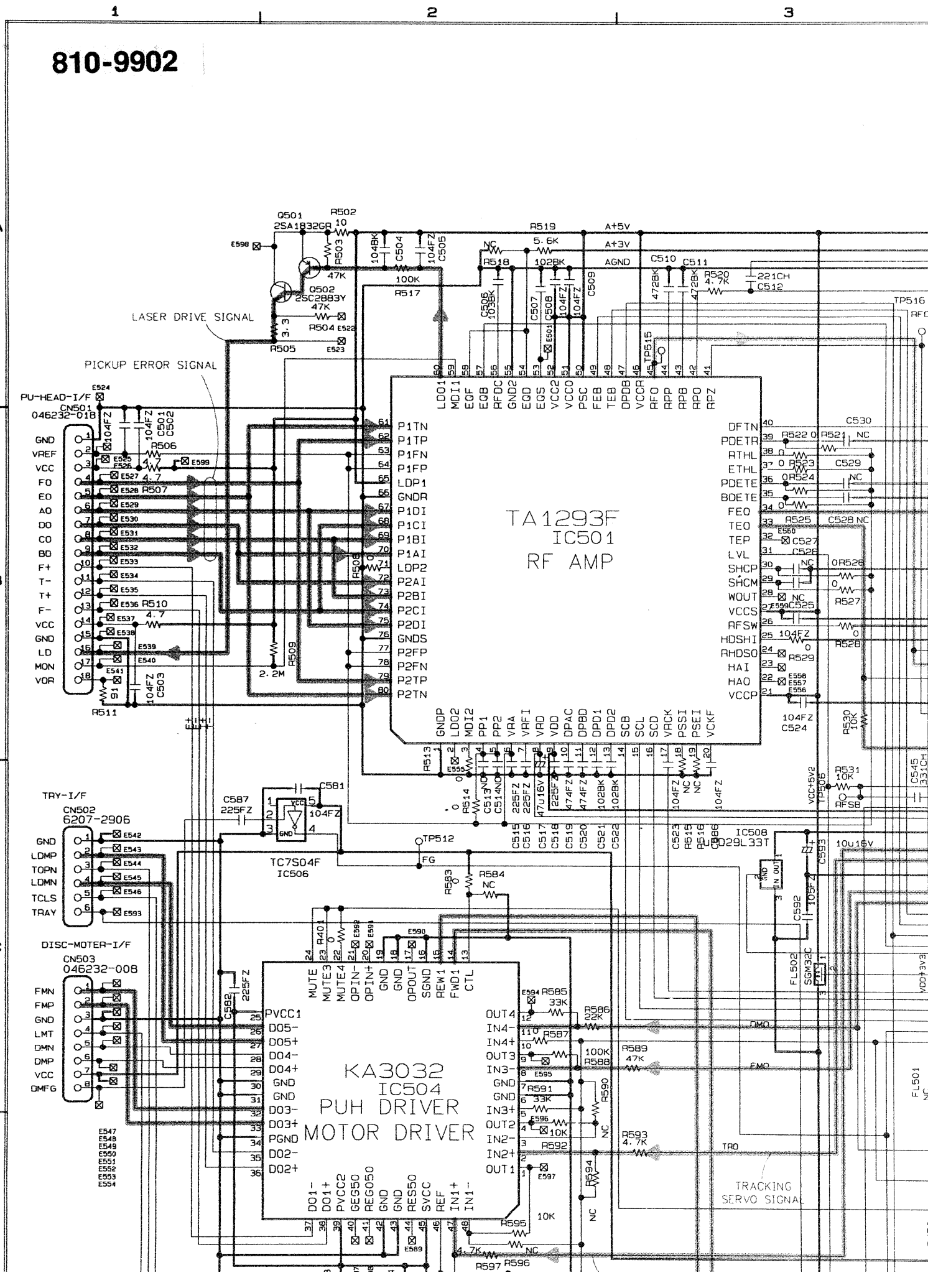


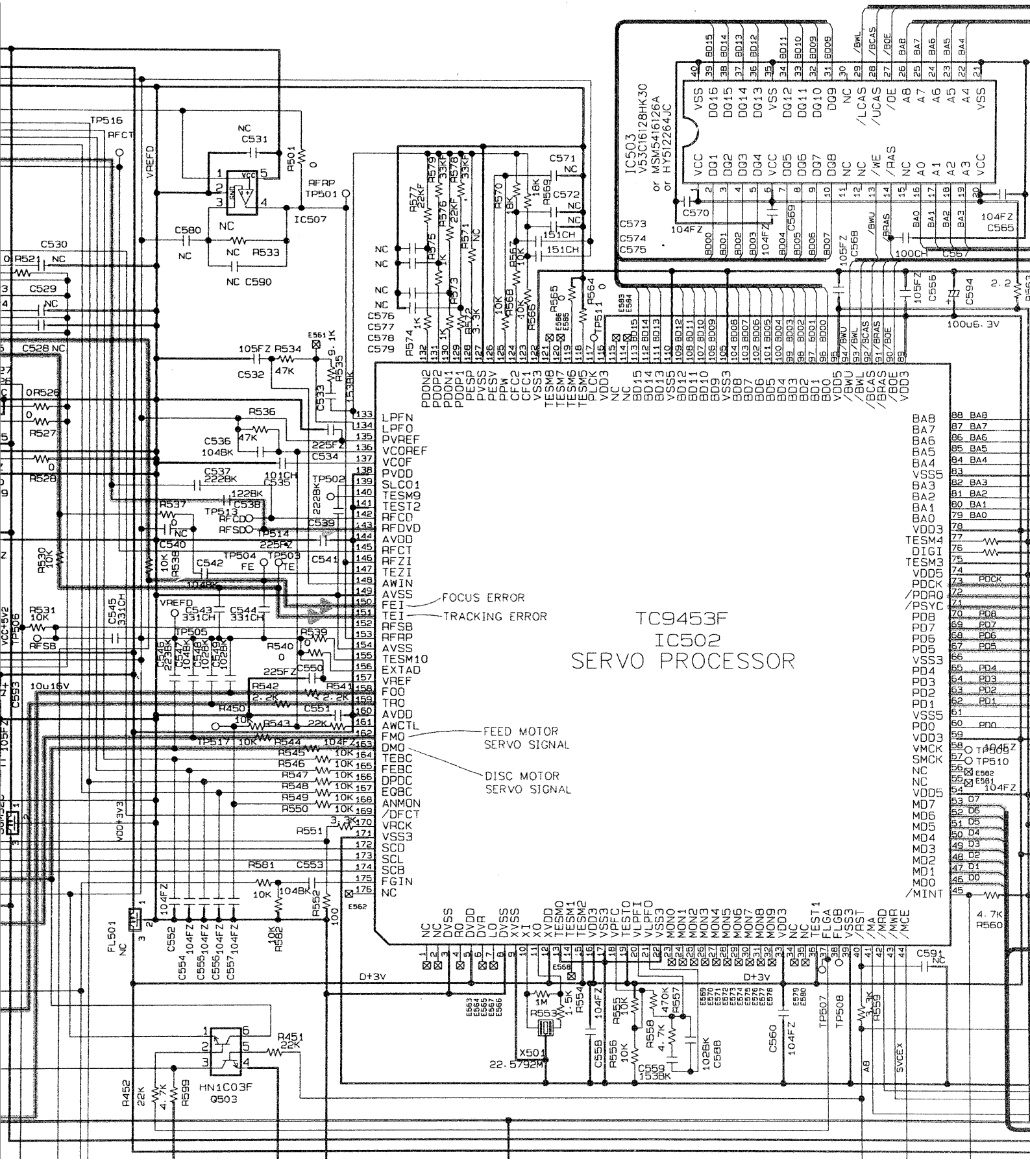
810-9902
TA1293F IC501 RF AMP
KA3032 IC504 PUH DRIVER MOTOR DRIVER
TC9453F IC502 SERVO PROCESSOR
IC201 TC203G08AF-0103(Z) TRACK BUFFER
IC301 MD36710X AV-MAIN-PROCESSOR
AUDIO DAC
IC601 TMP94CS40AF MAIN CPU
IC309 NC 3DNR-PROCESSOR
IC306 ADV7170 VIDEO-ENCORDER
IC310
IC615
IC618 NC
FOCUS ERROR
TRACKING ERROR
FEED MOTOR SERVO SIGNAL
DISC MOTOR SERVO SIGNAL
TRACKING SERVO SIGNAL
FOCUS SERVO SIGNAL
TRAY CONTROL SIGNAL
LASER DRIVE SIGNAL
PICKUP ERROR SIGNAL
SERIAL DATA
ADDRESS BUS
DATA BUS

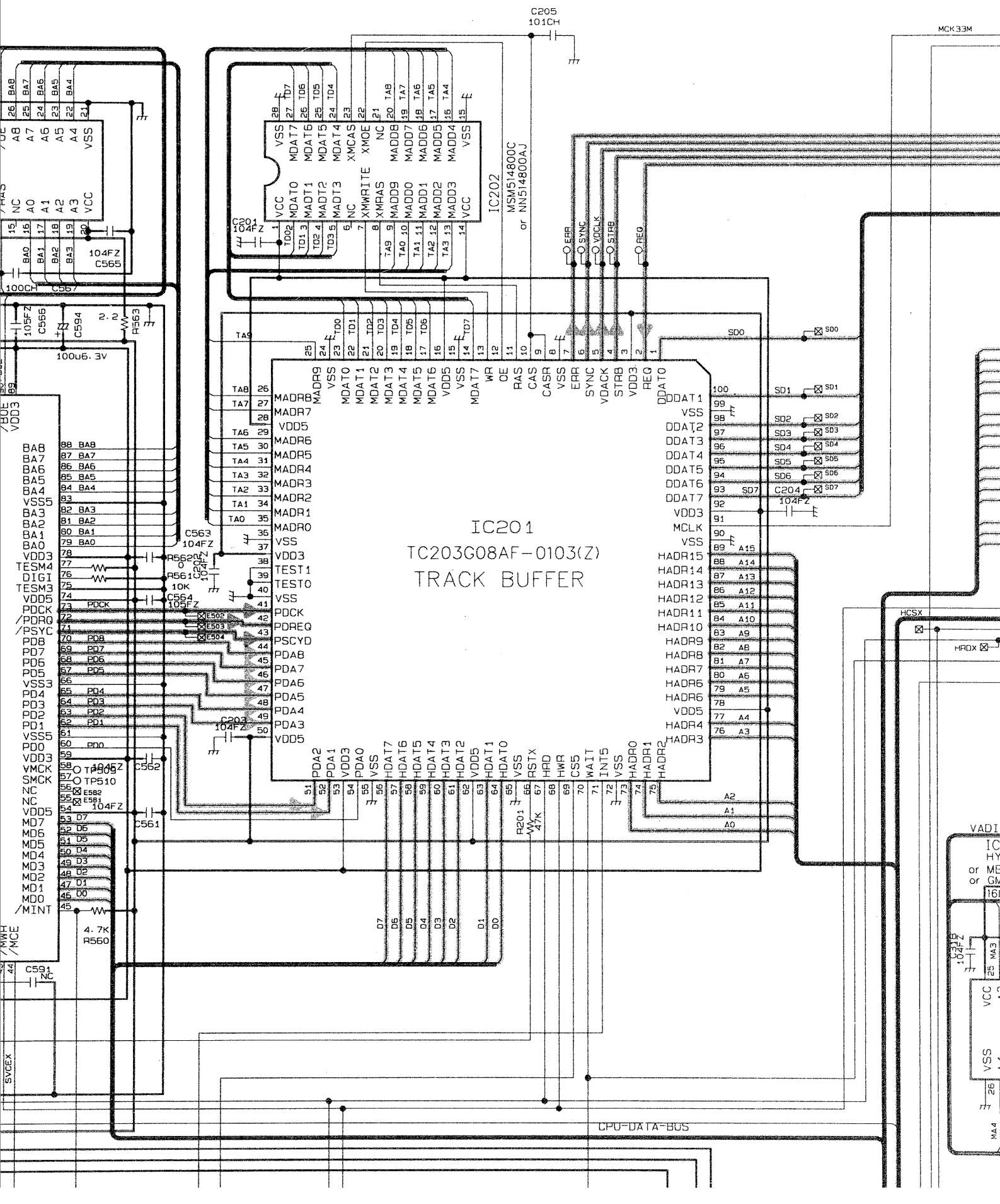
Fig. 3-5-5

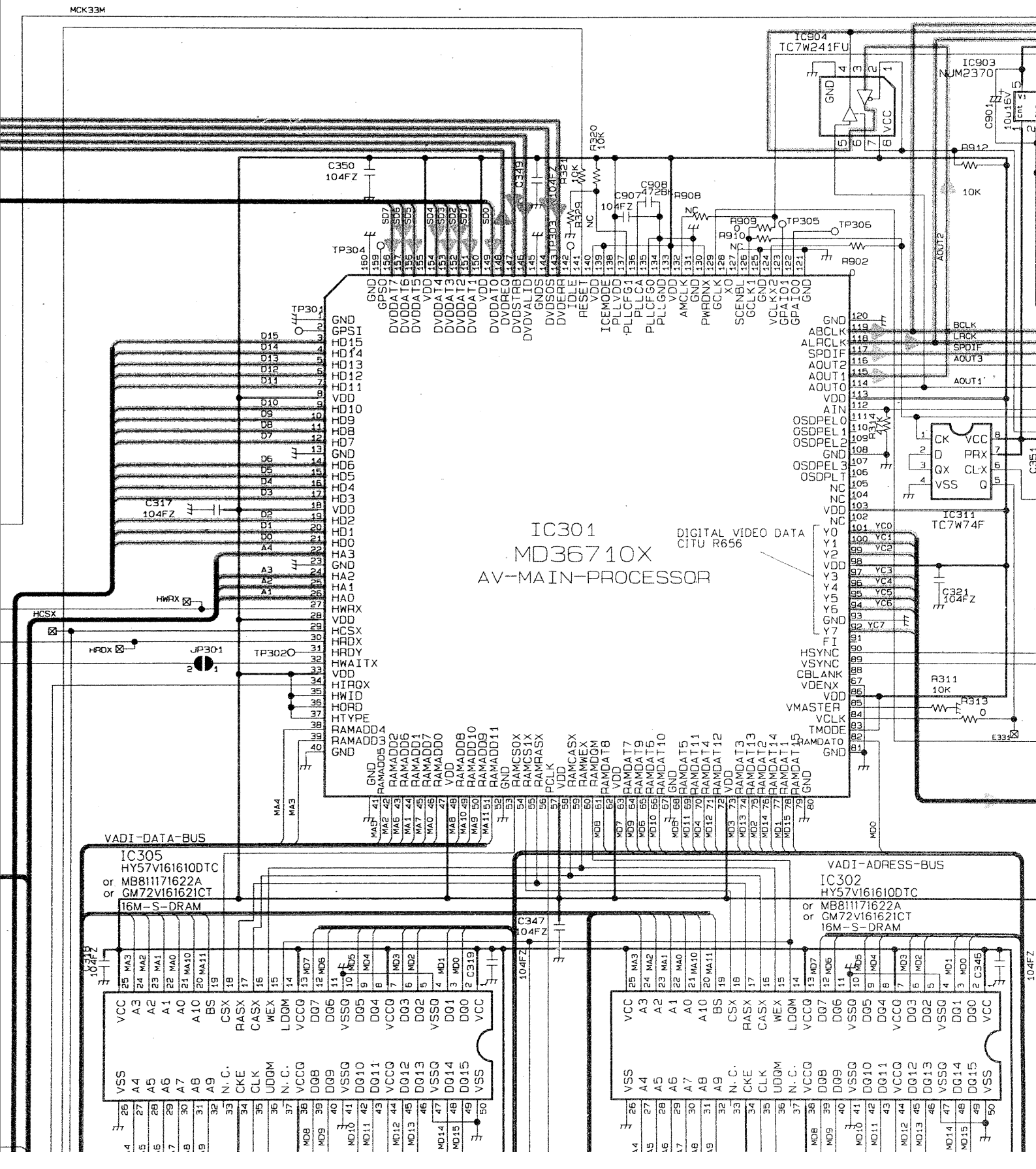
3-37 3-38 3-39 3-40

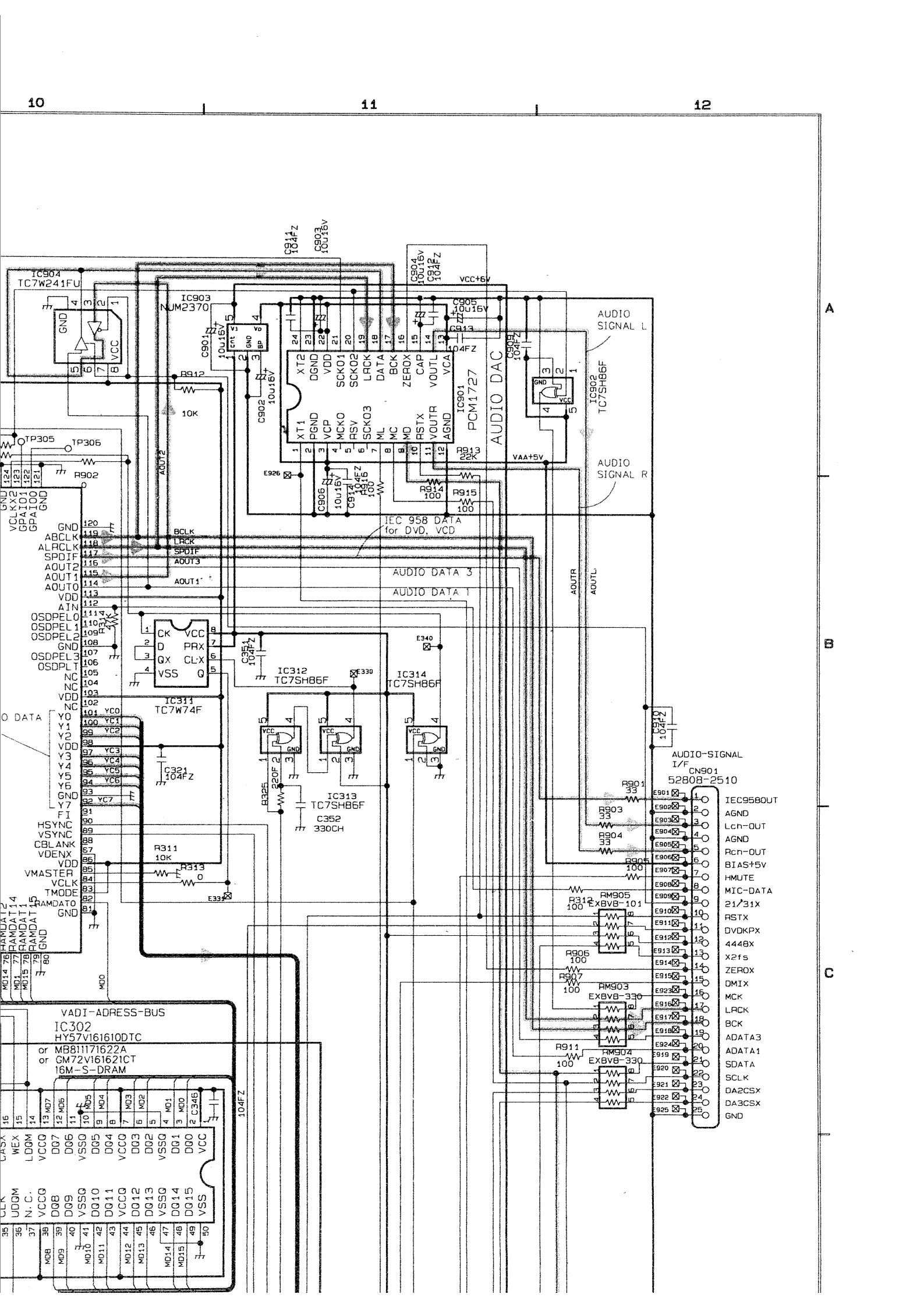
810-9902

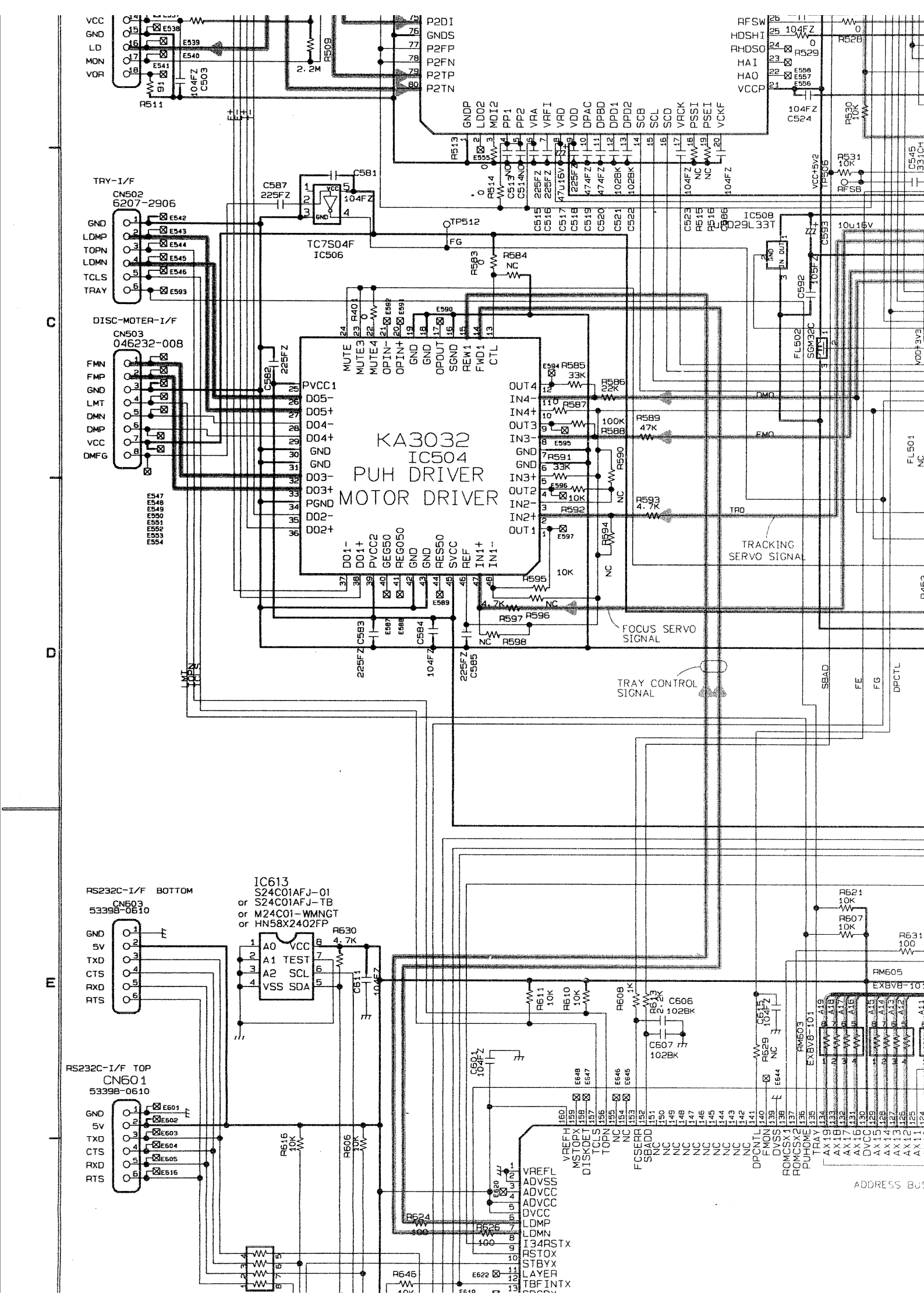

TA1293F
IC501
RF AMP
KA3032
IC504
PUH DRIVER
MOTOR DRIVER
TC7S04F
IC506
IC508
LASER DRIVE SIGNAL
PICKUP ERROR SIGNAL
TRACKING SERVO SIGNAL
PU-HEAD-I/F
CN501
046232-018
TRY-I/F
CN502
6207-2906
DISC-MOTER-I/F
CN503
046232-008
Q501
2SA1832GR
Q502
2SC2883Y
A+5V
A+3V
AGND
TP512
FG
TP515
TP516
FMO
TRO

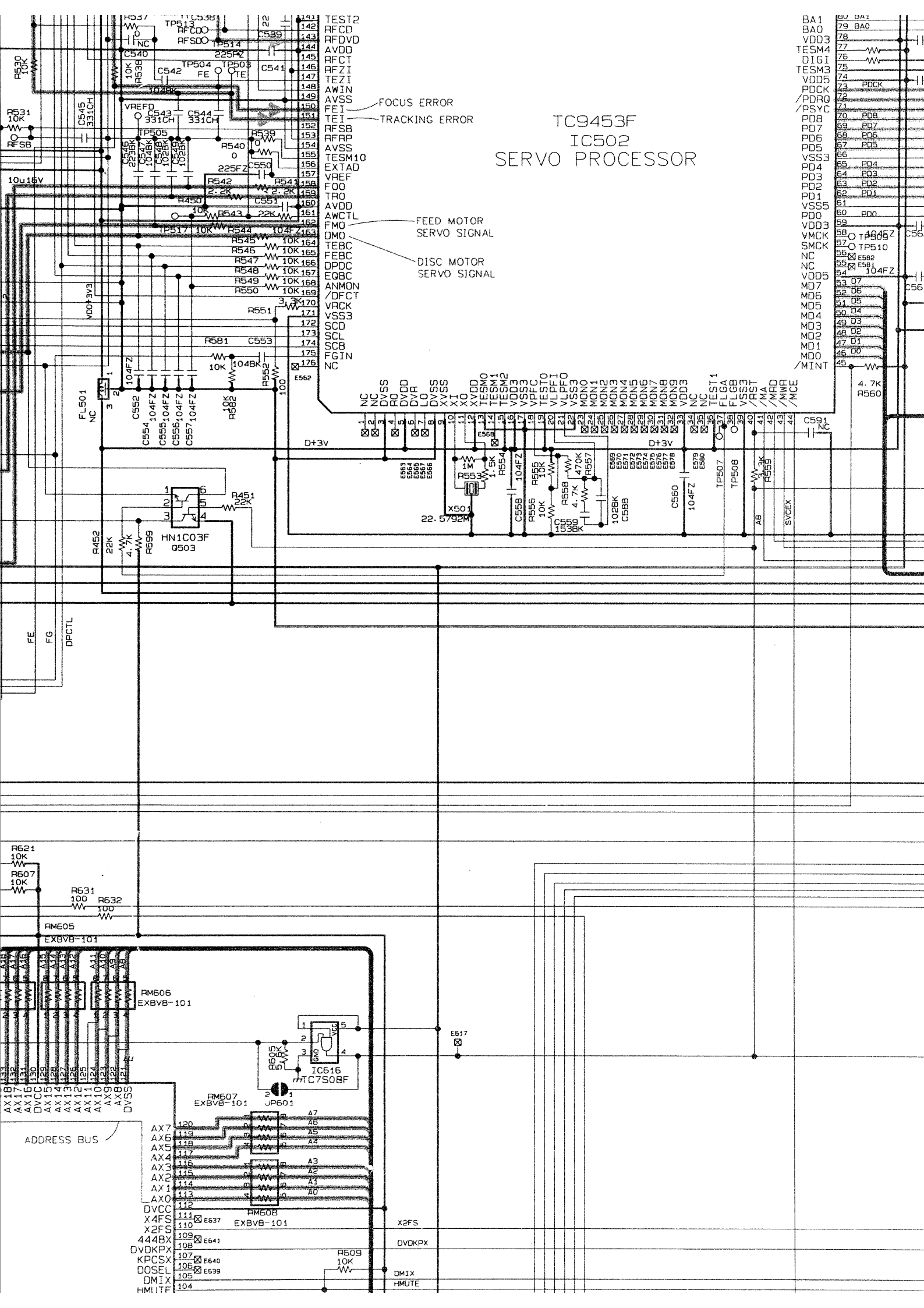

TC9453F
IC502
SERVO PROCESSOR
FOCUS ERROR
TRACKING ERROR
FEED MOTOR SERVO SIGNAL
DISC MOTOR SERVO SIGNAL
IC503
V53C16128HK30
or MSM5416126A
or HY5I2264JC
HN1C03F
Q503
X501
22.5792M

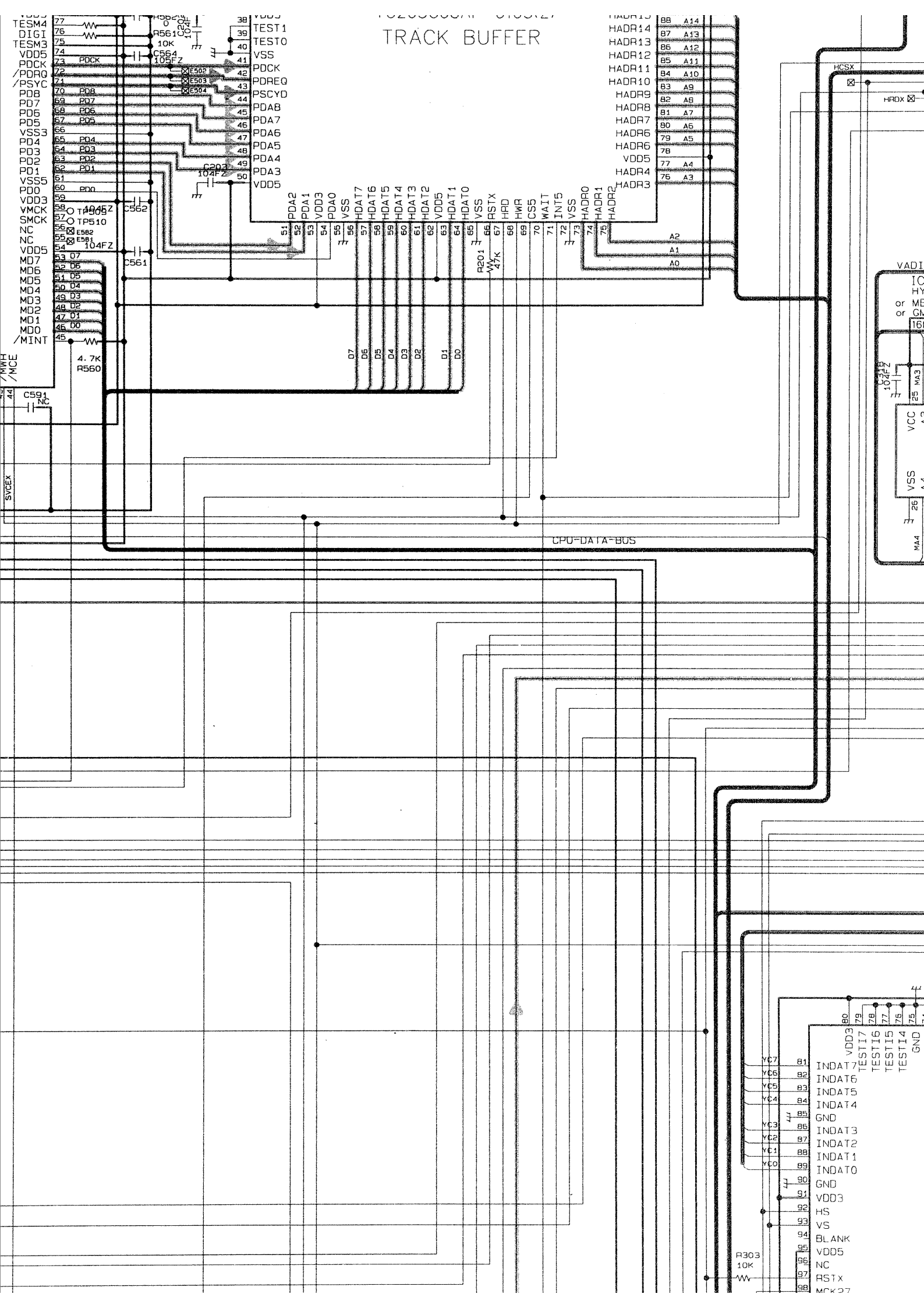

IC201
TC203G08AF-0103(Z)
TRACK BUFFER
IC202
MSM514800C
or NN514800AJ
C205
101CH
MCK33M
C201
104FZ
C565
100CH
C567
105FZ
C566
C594
100u6.3V
2.2
R563
C563
104FZ
C202
104FZ
R562
0
R561
10K
C564
105FZ
C562
104FZ
C561
104FZ
C203
104FZ
C204
104FZ
R560
4.7K
R201
47K
C591
NC
E502
E503
E504
E582
E581
TP509
TP510
PDCK
PDREQ
PSCYD
PDA8
PDA7
PDA6
PDA5
PDA4
PDA3
PDA2
PDA1
PDA0
HDAT7
HDAT6
HDAT5
HDAT4
HDAT3
HDAT2
HDAT1
HDAT0
RSTX
HRD
HWR
CS5
WAIT
INT5
HADR0
HADR1
HADR2
HADR3
HADR4
HADR5
HADR6
HADR7
HADR8
HADR9
HADR10
HADR11
HADR12
HADR13
HADR14
HADR15
MADR0
MADR1
MADR2
MADR3
MADR4
MADR5
MADR6
MADR7
MADR8
MADR9
MDAT0
MDAT1
MDAT2
MDAT3
MDAT4
MDAT5
MDAT6
MDAT7
MADD0
MADD1
MADD2
MADD3
MADD4
MADD5
MADD6
MADD7
MADD8
XMWRITE
XMRAS
XMCAS
XMOE
EAR
SYNC
VDCLK
STRB
REQ
SD0
SD1
SD2
SD3
SD4
SD5
SD6
SD7
HCSX
HRDX
CPU-DATA-BUS
SVCEX
/MWH
/MCE
/MINT
/PDRQ
/PSYC
TESM4
TESM3
DIGI
VMCK
SMCK

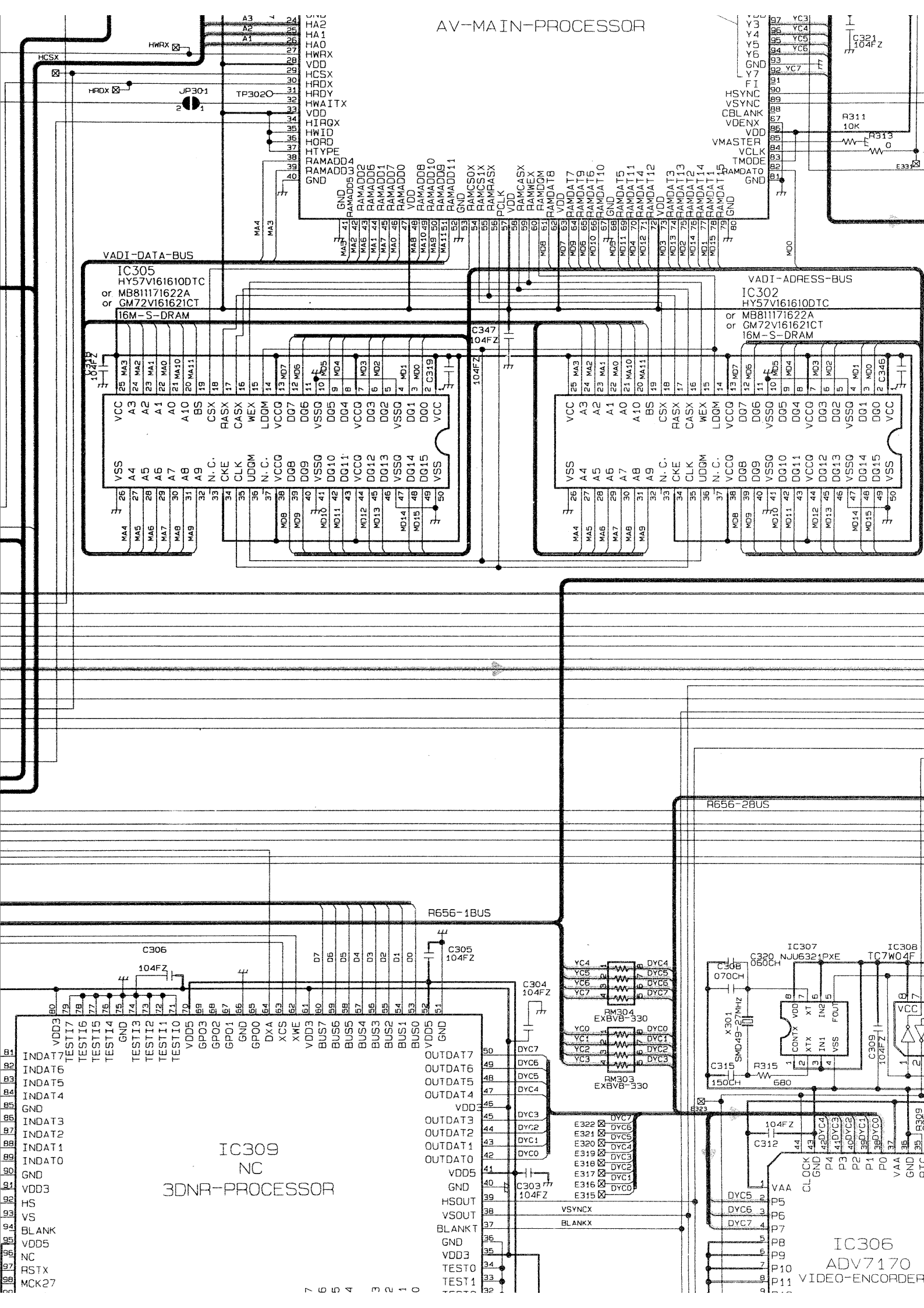

MCK33M
IC904
TC7W241FU
IC903
NJM2370
IC301
MD36710X
AV-MAIN-PROCESSOR
DIGITAL VIDEO DATA
CITU R656
IC311
TC7W74F
VADI-DATA-BUS
VADI-ADRESS-BUS
IC305
HY57V161610DTC
or MB811171622A
or GM72V161621CT
16M-S-DRAM
IC302
HY57V161610DTC
or MB811171622A
or GM72V161621CT
16M-S-DRAM
HWRX
HCSX
HRDX
JP301
TP301
TP302
TP303
TP304
TP305
TP306
C350 104FZ
C317 104FZ
C321 104FZ
C347 104FZ
R320 10K
R329 10K
R908 NC
R909 0
R910 NC
R902 0
R912 10K
R314 10K
R311 10K
R313 0
AOUT2
AOUT3
AOUT1
BCLK
LRCK
SPDIF

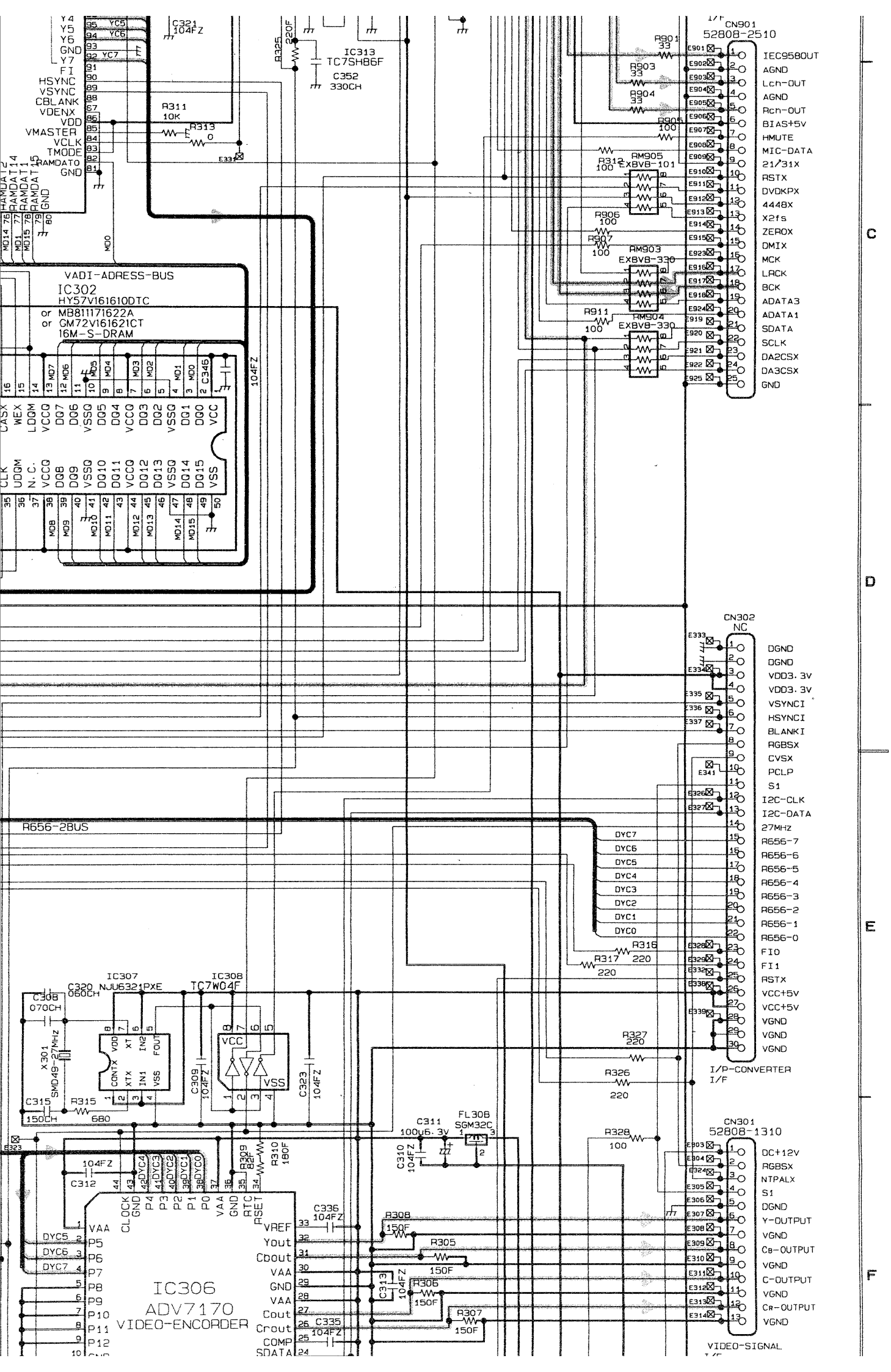

10
11
12
A
B
C
IC904
TC7W241FU
IC903
NJM2370
IC901
PCM1727
AUDIO DAC
IC902
TC7SH86F
AUDIO SIGNAL L
AUDIO SIGNAL R
VCC+6V
VAA+5V
IEC 958 DATA
for DVD, VCD
AUDIO DATA 3
AUDIO DATA 1
IC311
TC7W74F
IC312
TC7SH86F
IC313
TC7SH86F
IC314
TC7SH86F
AUDIO-SIGNAL
I/F
CN901
52808-2510
IEC958OUT
AGND
Lch-OUT
AGND
Rch-OUT
BIAS+5V
HMUTE
MIC-DATA
21/31X
RSTX
DVDKPX
448X
X2fs
ZEROX
DMIX
MCK
LRCK
BCK
ADATA3
ADATA1
SDATA
SCLK
DA2CSX
DA3CSX
GND
VADI-ADRESS-BUS
IC302
HY57V161610DTC
or MB811171622A
or GM72V161621CT
16M-S-DRAM

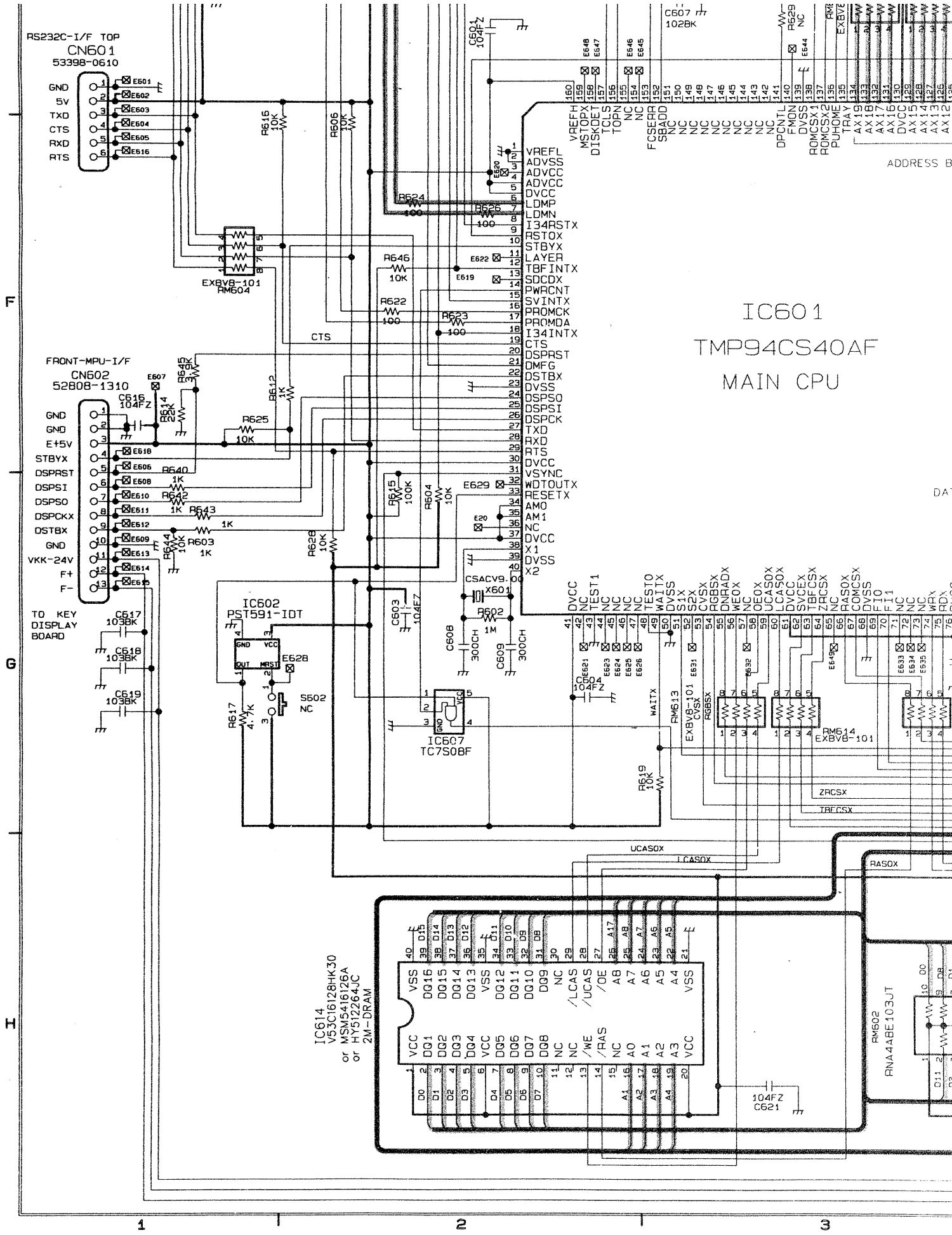

KA3032
IC504
PUH DRIVER
MOTOR DRIVER
TRACKING SERVO SIGNAL
FOCUS SERVO SIGNAL
TRAY CONTROL SIGNAL
TRY-I/F
CN502
6207-2906
DISC-MOTER-I/F
CN503
046232-008
TC7S04F
IC506
IC508
BD29L33T
RS232C-I/F BOTTOM
CN603
53398-0610
IC613
S24C01AFJ-01
or S24C01AFJ-TB
or M24C01-WMNGT
or HN58X2402FP
RS232C-I/F TOP
CN601
53398-0610
ADDRESS BUS

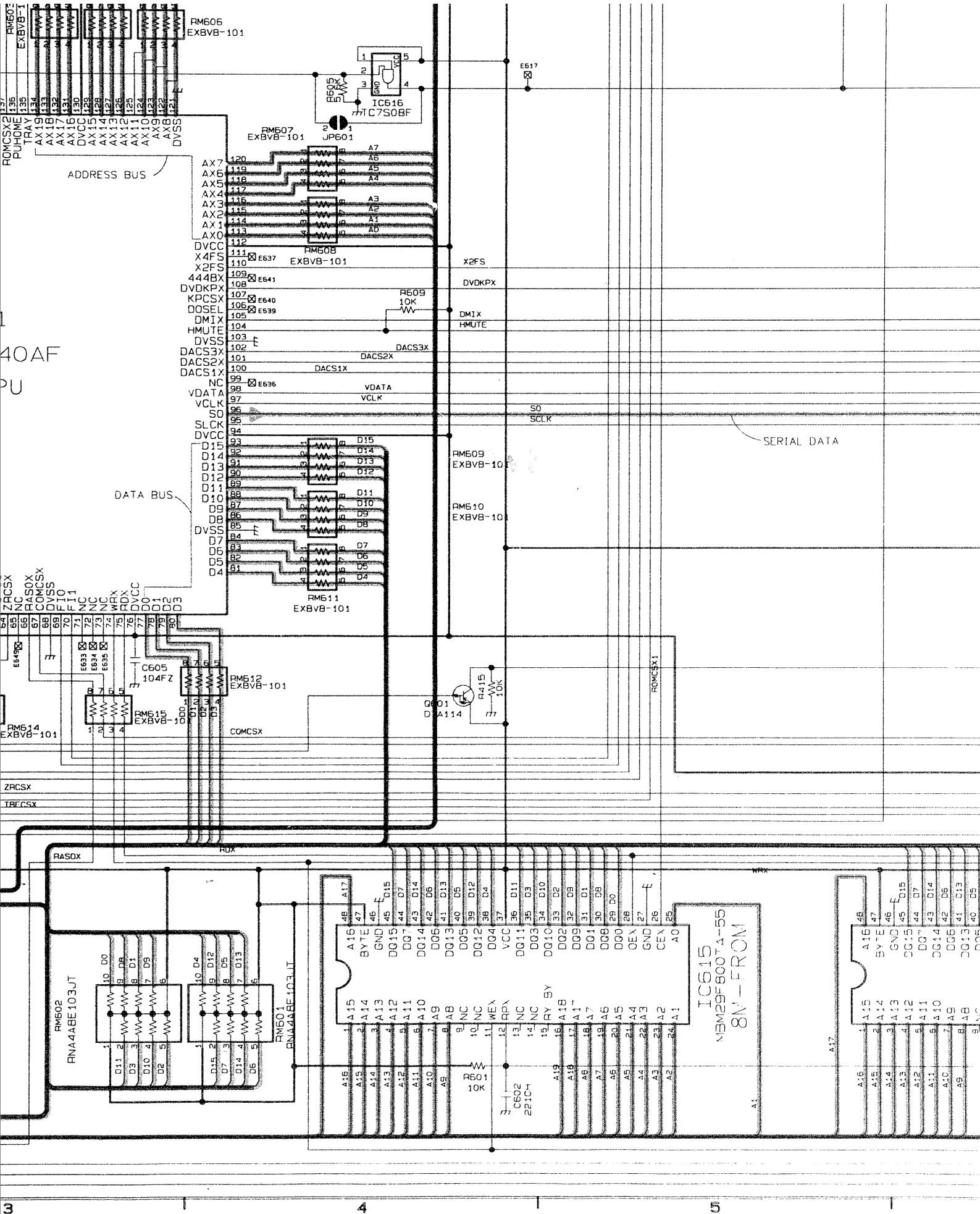

TC9453F
IC502
SERVO PROCESSOR
FOCUS ERROR
TRACKING ERROR
FEED MOTOR SERVO SIGNAL
DISC MOTOR SERVO SIGNAL
TEST2
RFCD
RFDVD
AVDD
RFCT
RFZI
TEZI
AWIN
AVSS
FEI
TEI
RFSB
RFAP
AVSS
TESM10
EXTAD
VREF
FOO
TRO
AVDD
AWCTL
FMO
DMO
TEBC
FEBC
DPDC
EQBC
ANMON
/DFCT
VRCK
VSS3
SCD
SCL
SCB
FGIN
NC
BA1
BA0
VDD3
TESM4
DIGI
TESM3
VDD5
PDCK
/PDRQ
/PSYC
PD8
PD7
PD6
PD5
VSS3
PD4
PD3
PD2
PD1
VSS5
PD0
VDD3
VMCK
SMCK
NC
NC
VDD5
MD7
MD6
MD5
MD4
MD3
MD2
MD1
MD0
/MINT
NC
NC
DVSS
RO
DVDD
DVR
LO
DVSS
XVSS
XI
XO
XVDD
TESM0
TESM1
TESM2
VDD3
VSS3
VPFC
TEST0
VLPFI
VLPFO
VSS3
MON0
MON1
MON2
MON3
MON4
MON5
MON6
MON7
MON8
MON9
VDD3
NC
NC
TEST1
FLGA
FLGB
VSS3
/RST
/MA
/MRD
/MWR
/MCE
D+3V
D+3V
X501
22.5792M
HN1C03F
Q503
FL501
NC
IC616
TC7S08F
RM605
EXBV8-101
RM606
EXBV8-101
RM607
EXBV8-101
RM608
EXBV8-101
JP601
ADDRESS BUS
AX7
AX6
AX5
AX4
AX3
AX2
AX1
AX0
DVCC
X4FS
X2FS
4448X
DVDKPX
KPCSX
DOSEL
DMIX
HMUTE
X2FS
DVDKPX
DMIX
HMUTE
FE
FG
DPCTL
SVCEX
A8

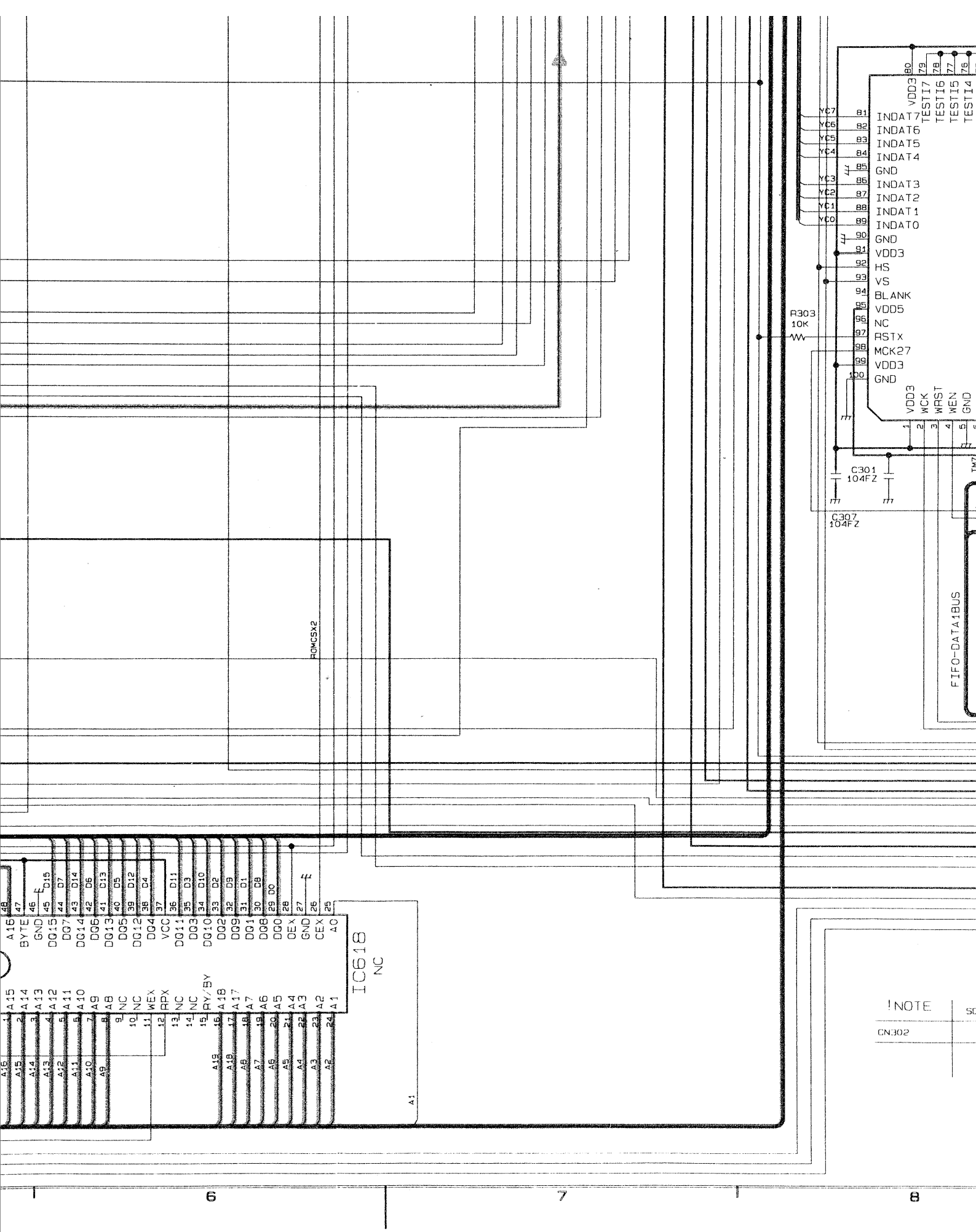

TRACK BUFFER
CPU-DATA-BUS
TESM4
DIGI
TESM3
VDD5
PDCK
/PDRQ
/PSYC
PD8
PD7
PD6
PD5
VSS3
PD4
PD3
PD2
PD1
VSS5
PD0
VDD3
VMCK
SMCK
NC
NC
VDD5
MD7
MD6
MD5
MD4
MD3
MD2
MD1
MD0
/MINT
/MWH
/MCE
SVCEX
R561
10K
C564
105FZ
C562
104FZ
C561
104FZ
R560
4.7K
C591
NC
C203
104FZ
TP505
TP510
E502
E503
E504
E582
E581
TEST1
TEST0
VSS
PDCK
PDREQ
PSCYD
PDA8
PDA7
PDA6
PDA5
PDA4
PDA3
VDD5
PDA2
PDA1
VDD3
PDA0
VSS
HDAT7
HDAT6
HDAT5
HDAT4
HDAT3
HDAT2
VDD5
HDAT1
HDAT0
VSS
RSTX
HPD
HWR
CS5
WAIT
INT5
VSS
HADR0
HADR1
HADR2
R201
47K
HADR14
HADR13
HADR12
HADR11
HADR10
HADR9
HADR8
HADR7
HADR6
HADR6
VDD5
HADR4
HADR3
A14
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
HCSX
HRDX
VADI
IC
HY
or ME
or GM
16
VCC
VSS
MA3
MA4
INDAT7
INDAT6
INDAT5
INDAT4
GND
INDAT3
INDAT2
INDAT1
INDAT0
GND
VDD3
HS
VS
BLANK
VDD5
NC
RSTX
R303
10K
VDD3
TESTI7
TESTI6
TESTI5
TESTI4
GND

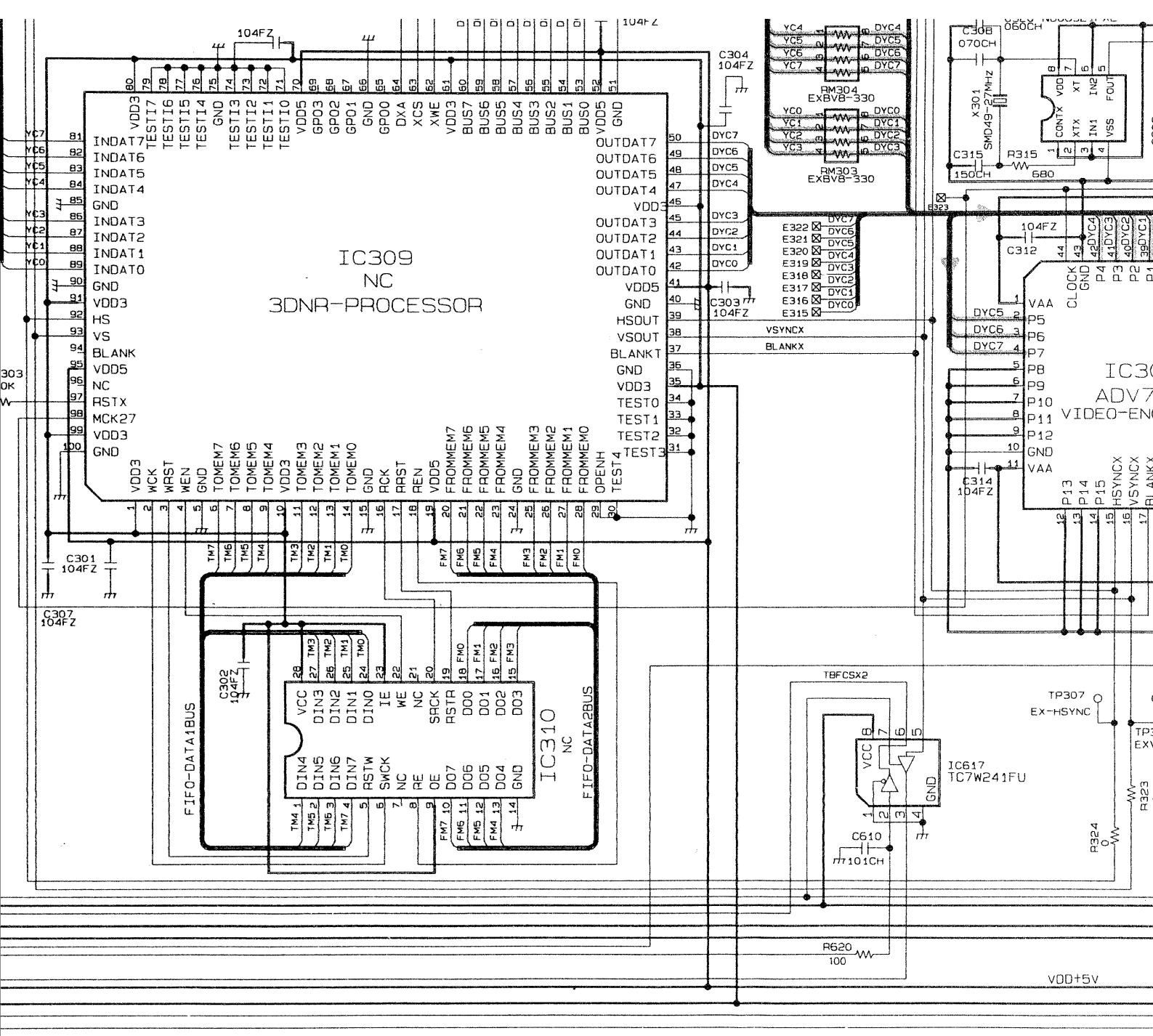

AV-MAIN-PROCESSOR
VADI-DATA-BUS
IC305
HY57V161610DTC
or MB811171622A
or GM72V161621CT
16M-S-DRAM
VADI-ADRESS-BUS
IC302
HY57V161610DTC
or MB811171622A
or GM72V161621CT
16M-S-DRAM
R656-2BUS
R656-1BUS
IC309
NC
3DNR-PROCESSOR
IC306
ADV7170
VIDEO-ENCORDER
IC307
IC308
TC7W04F
HWRX
HCSX
HRDX
JP301
TP302
HA2
HA1
HA0
HWRX
VDD
HCSX
HRDX
HRDY
HWAITX
VDD
HIRQX
HWID
HORD
HTYPE
RAMADD4
RAMADD3
GND
HSYNC
VSYNC
CBLANK
VDENX
VDD
VMASTER
VCLK
TMODE
RAMDAT0
GND
R311
10K
R313
0
C321
104FZ
C347
104FZ
C319
104FZ
C346
C306
104FZ
C305
104FZ
C304
104FZ
C303
104FZ
C308
070CH
C320
060CH
C315
150CH
R315
680
X301
SMD49-27MHz
C309
104FZ
C312
104FZ
RM304
EXBV8-330
RM303
EXBV8-330
VSYNCX
BLANKX
E315
E316
E317
E318
E319
E320
E321
E322
E323


CN901
52808-2510
IEC958OUT
AGND
Lch-OUT
AGND
Rch-OUT
BIAS+5V
HMUTE
MIC-DATA
21/31X
RSTX
DVDKPX
4448X
X2fs
ZEROX
DMIX
MCK
LRCK
BCK
ADATA3
ADATA1
SDATA
SCLK
DA2CSX
DA3CSX
GND
VADI-ADRESS-BUS
IC302
HY57V161610DTC
or MB811171622A
or GM72V161621CT
16M-S-DRAM
IC313
TC7SH86F
C352
330CH
C321
104FZ
R311
10K
R313
0
R325
220F
R901
33
R903
33
R904
33
R905
100
R906
100
R907
100
R911
100
RM905
EXBV8-101
RM903
EXBV8-330
RM904
EXBV8-330
CN302
NC
DGND
DGND
VDD3.3V
VDD3.3V
VSYNCI
HSYNCI
BLANKI
RGBSX
CVSX
PCLP
S1
I2C-CLK
I2C-DATA
27MHz
R656-7
R656-6
R656-5
R656-4
R656-3
R656-2
R656-1
R656-0
FI0
FI1
RSTX
VCC+5V
VCC+5V
VGND
VGND
VGND
I/P-CONVERTER
I/F
R656-2BUS
DYC7
DYC6
DYC5
DYC4
DYC3
DYC2
DYC1
DYC0
R316
220
R317
220
R327
220
R326
220
IC307
NJU6321PXE
C320
060CH
IC308
TC7W04F
C308
070CH
X301
27MHz
SMD49
C309
104FZ
C323
104FZ
C315
150CH
R315
680
C311
100u6.3V
FL30B
SGM32C
C310
104FZ
R328
100
CN301
52808-1310
DC+12V
RGBSX
NTPALX
S1
DGND
Y-OUTPUT
VGND
CB-OUTPUT
VGND
C-OUTPUT
VGND
CR-OUTPUT
VGND
VIDEO-SIGNAL
C312
104FZ
R309
82F
R310
180F
C336
104FZ
R308
150F
R305
150F
C313
104FZ
R306
150F
R307
150F
C335
104FZ
IC306
ADV7170
VIDEO-ENCORDER
VAA
P5
P6
P7
P8
P9
P10
P11
P12
VREF
Yout
Cbout
VAA
GND
VAA
Cout
Crout
COMP
SDATA
CLOCK
GND
P4
P3
P2
P1
P0
VAA
GND
RTC
RSET


RS232C-I/F TOP
CN601
53398-0610
GND
5V
TXD
CTS
RXD
RTS
EXBV8-101
RM604
FRONT-MPU-I/F
CN602
52808-1310
GND
GND
E+5V
STBYX
DSPRST
DSPSI
DSPSO
DSPCKX
DSTBX
GND
VKK-24V
F+
F-
TO KEY
DISPLAY
BOARD
IC602
PST591-IDT
S502
NC
IC607
TC7S08F
IC601
TMP94CS40AF
MAIN CPU
ADDRESS B
DA
VREFL
ADVSS
ADVCC
ADVCC
DVCC
LDMP
LDMN
I34RSTX
RSTOX
STBYX
LAYER
TBFINTX
SDCDX
PWRCNT
SVINTX
PROMCK
PROMDA
I34INTX
CTS
DSPRST
DMFG
DSTBX
DVSS
DSPSO
DSPSI
DSPCK
TXD
RXD
RTS
DVCC
VSYNC
WDTOUTX
RESETX
AM0
AM1
NC
DVCC
X1
DVSS
X2
CSACV9.00
X601
WAITX
RM613
EXBV8-101
RM614
EXBV8-101
UCASOX
LCASOX
RASOX
ZRCSX
TBFCSX
IC614
V53C16128HK30
or MSM5416126A
or HY5122664JC
2M-DRAM
RM602
RNA44BE103JT
104FZ
C621
F
G
H
1
2
3


RM606
EXBV8-101
RM607
EXBV8-101
RM608
EXBV8-101
RM609
EXBV8-101
RM610
EXBV8-101
RM611
EXBV8-101
RM612
EXBV8-101
RM614
EXBV8-101
RM615
EXBV8-101
IC616
TC7S08F
JP601
R605
10K
R609
10K
R415
10K
R601
10K
C605
104FZ
C602
221CH
Q601
DTA114
ADDRESS BUS
DATA BUS
SERIAL DATA
X2FS
DVDKPX
DMIX
HMUTE
DACS3X
DACS2X
DACS1X
VDATA
VCLK
SO
SCLK
COMCSX
ROMCSX1
ZRCSX
TRCCSX
RASOX
RDX
WRX
RM602
RNA4A8E103JT
RM601
RNA4A8E103JT
IC615
MBM29F800TA-55
8M-FROM


VDD3
TESTI7
TESTI6
TESTI5
TESTI4
INDAT7
INDAT6
INDAT5
INDAT4
GND
INDAT3
INDAT2
INDAT1
INDAT0
GND
VDD3
HS
VS
BLANK
VDD5
NC
RSTX
MCK27
VDD3
GND
R303
10K
C301
104FZ
C307
104FZ
VDD3
WCK
WRST
WEN
GND
FIFO-DATA1BUS
ROMCSX2
IC618
NC
A16
BYTE
GND
DQ15
DQ7
DQ14
DQ6
DQ13
DQ5
DQ12
DQ4
VCC
DQ11
DQ3
DQ10
DQ2
DQ9
DQ1
DQ8
DQ0
OEX
GND
CEX
A0
A15
A14
A13
A12
A11
A10
A9
A8
NC
NC
WEX
RPX
NC
NC
RY/BY
A18
A17
A7
A6
A5
A4
A3
A2
A1
!NOTE
CN302
6
7
8



!NOTE	SD-1**9.2**9	SD-3**9.K***	SD-5**9
CN302	NC		3-176314-0

8 9 10

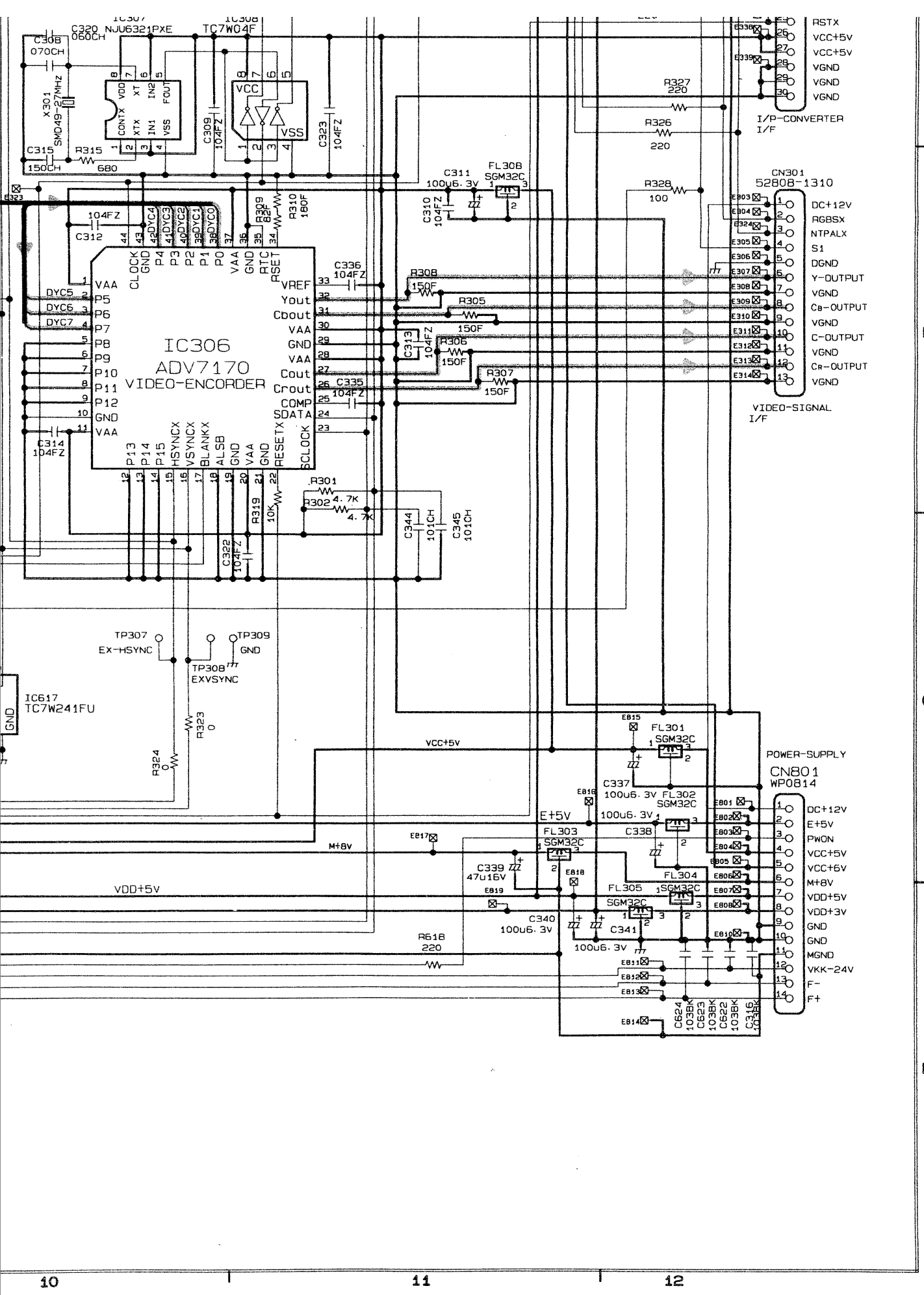
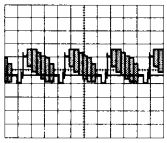

IC306
ADV7170
VIDEO-ENCORDER
IC307
NJU6321PXE
IC308
TC7W04F
IC617
TC7W241FU
CN301
5280B-1310
I/P-CONVERTER I/F
VIDEO-SIGNAL I/F
CN801
WP0814
POWER-SUPPLY
RSTX
VCC+5V
VGND
DC+12V
RGBSX
NTPALX
S1
DGND
Y-OUTPUT
CB-OUTPUT
C-OUTPUT
CR-OUTPUT
E+5V
PWON
VCC+6V
M+8V
VDD+5V
VDD+3V
MGND
VKK-24V
F-
F+
TP307 EX-HSYNC
TP308 EXVSYNC
TP309 GND
X301 27MHz
R301 4.7K
R302 4.7K
R305 150F
R306 150F
R307 150F
R308 150F
R315 680
R318 10K
R323 0
R324 0
R326 220
R327 220
R328 100
R618 220
C311 100u6.3V
C337 100u6.3V
C338 100u6.3V
C339 47u16V
C340 100u6.3V
C341 100u6.3V
FL301 SGM32C
FL302 SGM32C
FL303 SGM32C
FL304 SGM32C
FL305 SGM32C
FL308 SGM32C
10
11
12
F
G
H

Fig. 3-5-5

5-4. Output Circuit Diagram

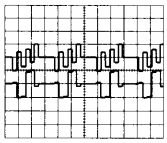
① JX01 Composite video output D-10



CVBS output
75Ω terminated
100% color bar

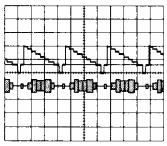
V: 500 mV/div
H: 20 µs/div

⑤ CNX01
(a) Pin ⑥ (CB) E-1
(b) Pin ② (CR) E-1



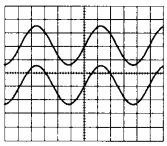
100% color bar (Play)
(a)
(b)
V: 1 V/div
H: 20 µs/div

② JX01
(a) S-video output Y E-10
(b) S-video output C D-10



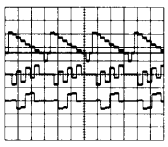
S-Y/C
75Ω terminated
100% color bar
(a) Y
(b) C
V: 500 mV/div
H: 20 µs/div

⑥ JY01 L ch output C-10
/ R ch output B-9
(1 kHz, FS)



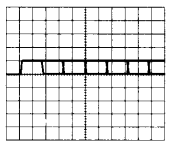
L ch output
R ch output
V: 2 V/div
H: 200 µs/div

③ JY01 Y/CB/CR output C-10



Component output
75Ω terminated
100% color bar
(Play)
Y
CB
CR
V: 500 mV/div
H: 20 µs/div

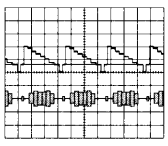
⑦ JY01 COAXIAL -DIGITAL OUTPUT C-9



75Ω terminated

V: 500 mV/div
H: 0.1 µs/div

④ CNX01
(a) Pin ⑧ (Y) E-1
(b) Pin ④ (C) E-1



100% color bar
(Play)
(a)
(b)
V: 1 V/div
H: 20 µs/div

IC

ICY03 LPF & AMP

1	0
2	0
3	0
4	-10.0
5	0
6	0
7	0
8	9.5

ICY09 BUFFER

1	2.5
2	2.4
3	2.5
4	2.4
5	2.5
6	2.4
7	0
8	2.4
9	2.5
10	2.5
11	2.0
12	2.0
13	3.9
14	4.9

Transistor

QX01 BUFFER

1	1.8
2	1.1
3	0
4	2.1
5	1.4
6	0

QX07 DRIVER

1	3.8
2	3.1
3	0
4	0
5	0
6	0

QX99 BUFFER

E	8.4
C	9.4
B	9.1

QX02 BUFFER

1	2.1
2	1.4
3	0
4	2.1
5	1.4
6	0

QX08 DRIVER

1	0
2	0
3	5.0
4	2.0
5	2.7
6	0

QY01 SWITCH

1	5.8
2	5.5
3	5.5
4	0
5	0
6	0

QX03 BUFFER

1	2.7
2	2.0
3	0
4	2.4
5	1.7
6	0

QX09 DRIVER

1	0
2	0
3	5.0
4	1.6
5	2.3
6	0

QY02 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QX04 BUFFER

1	2.7
2	2.0
3	0
4	2.7
5	2.0
6	0

QX10 DRIVER

1	0
2	0
3	5.0
4	1.7
5	2.3
6	0

QY03 SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QX05 BUFFER

1	2.1
2	2.7
3	5.0
4	1.8
5	2.4
6	5.0

QX11 DRIVER

1	0
2	0
3	5.0
4	2.7
5	3.4
6	0

QY05 SWITCH

E	5.8
C	0
B	5.5

QY06 SWITCH

E	5.8
C	0
B	5.8

QX06 MIXER

1	1.1
2	1.8
3	5.0
4	3.1
5	3.9
6	3.9

QX12 DRIVER

1	0
2	0
3	5.0
4	2.7
5	3.4
6	0

QY07 SWITCH

E	5.8
C	0
B	5.8

Fig. 3-5-6

Part No.	Location
CNY01	B1
CNY02	A9
CNX01	E1
CX01	E2
CX02	G3
CX03	E4
CX04	E4
CX05	E5
CX06	E5
CX07	E6
CX08	F6
CX09	G6
CX10	E9
CX11	F9
CX12	G9
CX13	E9
CX14	E9
CX15	E9
CX16	D9
CX17	D9
CX18	D9
CX19	E9
CX28	B9
CX96	B9
CX97	E6
CX98	E2
CX99	E3
CY09	B9
CY10	B4
CY13	C4
CY15	B4
CY19	D5
CY22	C5
CY23	C5
CY24	C5
CY25	C5
CY26	C5
CY29	C7
CY30	C7
CY31	B7
CY32	B8
CY33	C9
CY34	C9
CY36	D3
CY69	C4
DY01	D3
EX02	F2
EX04	E2
EX06	E2
EX07	E2
EX08	E2
EX09	E2
EX10	E2
EX11	E2
EX14	E3
EX15	F3
EX16	F3
EX17	G3
EX21	D9
EX22	D9
EX23	D9
EX24	E9
EX25	E9
EX26	E9

Part No.	Location
EY01	C2
EY02	C2
EY03	C2
EY04	C2
EY05	C2
EY06	C2
EY18	D3
EY19	C4
EY20	B5
EY21	D5
EY23	A9
EY24	B9
EY26	B9
EY27	C9
EY28	C9
EY29	C9
EY30	C9
EY31	C9
EY33	C4
EY34	B9
EY35	B9
EY36	B9
EY37	B9
FLX01	E3
FLX02	F2
FLX03	F3
FLX04	G3
FLY01	B9
ICY03	C4
ICY09	C8
JX01	B10
JY01	D10
QX01	F2
QX02	F2
QX03	F4
QX04	F3
QX05	E3
QX06	E4
QX07	E6
QX08	F6
QX09	G6
QX10	E8
QX11	F8
QX12	G8
QX13	F8
QX14	F7
QX99	E3
QY01	D3
QY02	B6
QY03	D6
QY05	D3
QY06	D3
QY07	C4
RJ01	D10
RJ02	D8
RJ03	D9
RJ04	E4
RJ05	F1
RJ06	G2
RJ07	G4
RJ08	G2
RJ09	E2
RJ10	G5
RJ11	G5

Part No.	Location
RJ12	F7
RJ13	F2
RJ14	G4
RJ15	F3
RJ16	F7
RJ17	F7
RJ18	G5
RJ19	F8
RJ20	F5
RJ21	E3
RJ22	E5
RJ23	F5
RJ24	G4
RJ25	F4
RJ26	F5
RJ27	F5
RJ28	G7
RJ29	D9
RJ30	D9
RJ31	F5
RJ32	F4
RJ51	B8
RJ52	B8
RJ53	D6
RJ54	B8
RJ55	D3
RJ56	D2
RJ57	C2
RJ58	C3
RJ59	D2
RJ60	B6
RJ61	B6
RJ62	C4
RJ63	B9
RX01	E2
RX02	F2
RX03	F2
RX04	G2
RX05	E2
RX06	E2
RX07	F2
RX08	F2
RX09	E2
RX10	F2
RX11	F2
RX12	F2
RX13	E3
RX14	F3
RX15	F3
RX15	F3
RX16	F3
RX17	E3
RX18	F3
RX19	F4
RX20	G3
RX21	E4
RX22	E4
RX23	E4
RX24	E4
RX25	E4
RX26	E5
RX27	E5
RX28	C4
RX29	D5

Part No.	Location
RX30	E5
RX31	E5
RX32	E5
RX33	E5
RX34	F5
RX35	F5
RX36	F5
RX37	F5
RX38	G5
RX39	F5
RX40	F5
RX41	F5
RX42	E8
RX43	E8
RX44	E8
RX45	E8
RX46	F8
RX47	F8
RX48	F8
RX49	F8
RX50	G8
RX51	G7
RX52	F8
RX53	F8
RX54	F8
RX55	F8
RX56	F8
RX57	F8
RX58	E9
RX59	E9
RX60	F9
RX61	F7
RX62	D9
RX63	D9
RX64	D9
RX65	D9
RX66	E9
RX67	E2
RX68	E2
RX69	E2
RX80	E5
RX81	F8
RX82	G8
RX95	E6
RX96	E6
RX97	E5
RX98	E5
RX99	E3
RY01	B2
RY08	B4
RY09	C4
RY16	B5
RY17	C5
RY18	B5
RY19	D5
RY27	C5
RY28	C5
RY29	C6
RY30	D6
RY31	B6
RY32	C6
RY33	B8
RY36	B9
RY38	C9

Part No.	Location
RY39	C9
RY40	C9
RY42	B7
RY43	D3
RY44	C2
RY45	C2
RY46	C2
RY47	C2
RY48	C2
RY49	C2
RY50	D2
RY51	D2
RY52	D2
RY53	D2
RY54	D2
RY55	D2
RY56	D2
RY57	D2
RY58	D2
RY59	D2
RY60	C2

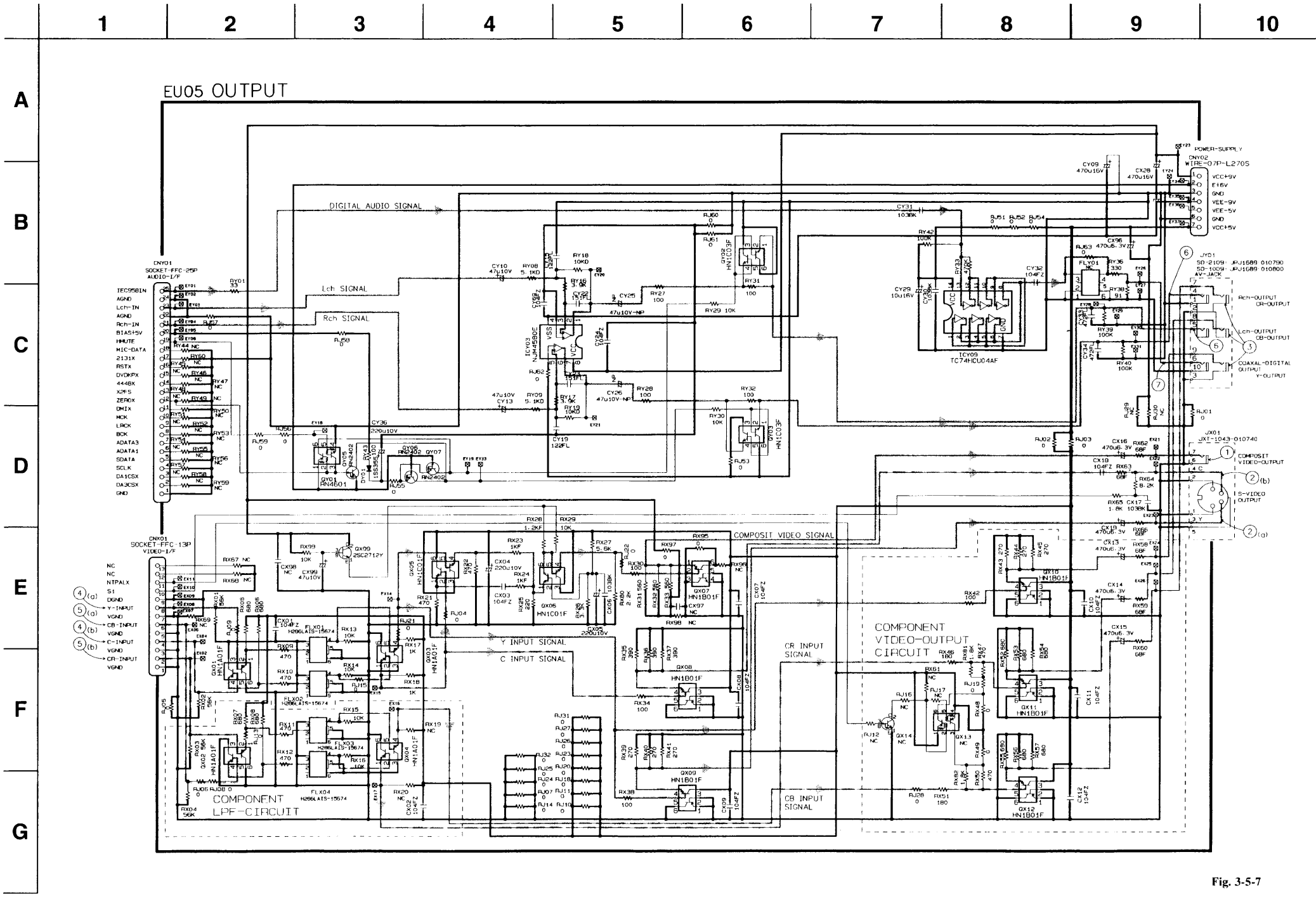
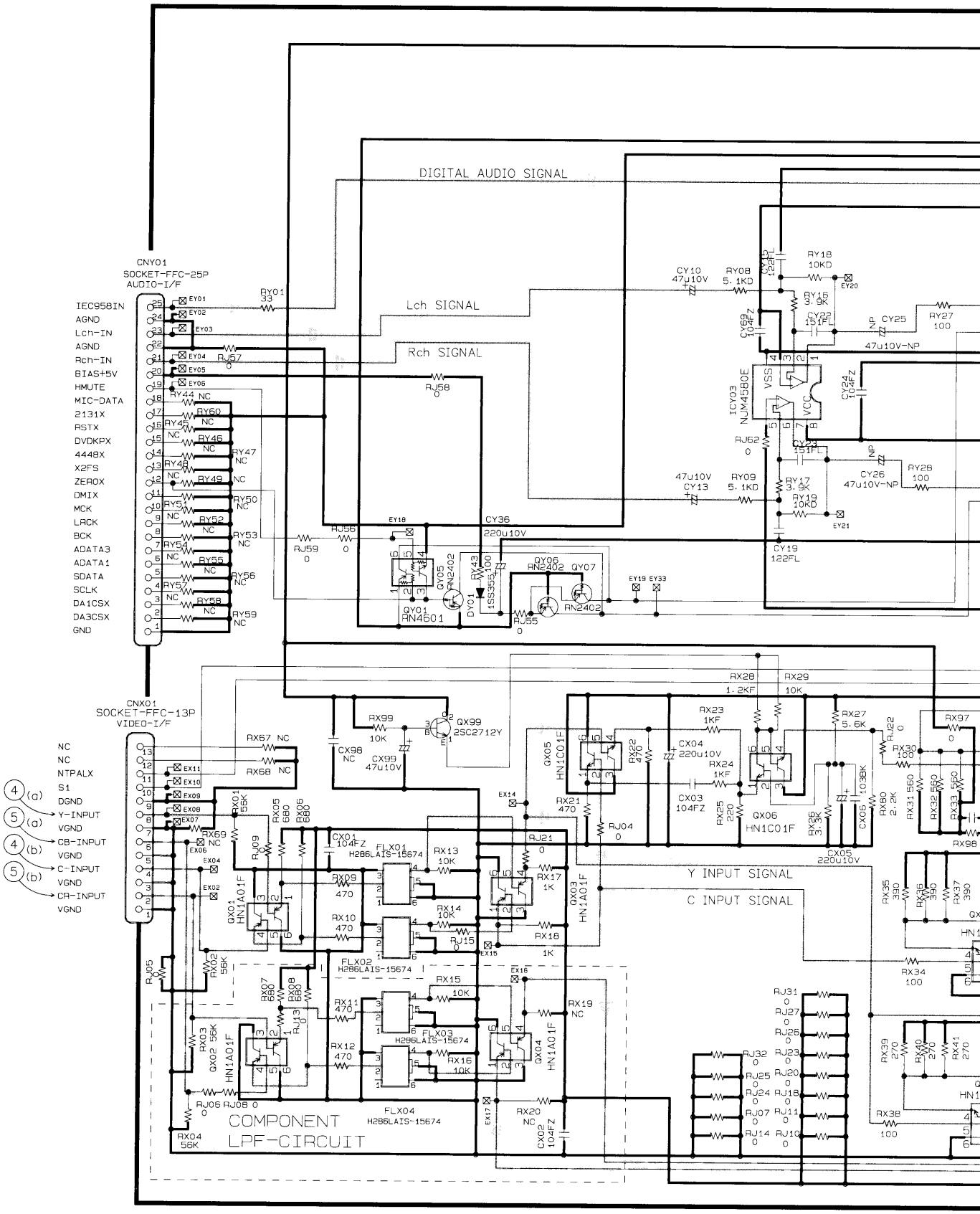

EU05 OUTPUT
DIGITAL AUDIO SIGNAL
Lch SIGNAL
Rch SIGNAL
COMPOSIT VIDEO SIGNAL
Y INPUT SIGNAL
C INPUT SIGNAL
CR INPUT SIGNAL
CB INPUT SIGNAL
COMPONENT LPF-CIRCUIT
COMPONENT VIDEO-OUTPUT CIRCUIT
POWER-SUPPLY
CNY01 SOCKET-FFC-25P AUDIO-I/F
CNX01 SOCKET-FFC-13P VIDEO-I/F
ICY09 TC74HCU04AF
ICY03 NJM4580E
JY01 SD-2109: JPU1689-010790 SD-1009: JPU1689-010800 AV-JACK
JX01 JXT-1043-010740
Rch-OUTPUT CR-OUTPUT
Lch-OUTPUT CB-OUTPUT
COAXAL-DIGITAL OUTPUT Y-OUTPUT
COMPOSIT VIDEO-OUTPUT
S-VIDEO OUTPUT

Fig. 3-5-7

EU05 OUTPUT


DIGITAL AUDIO SIGNAL
Lch SIGNAL
Rch SIGNAL
Y INPUT SIGNAL
C INPUT SIGNAL
CNY01
SOCKET-FFC-25P
AUDIO-I/F
IEC958IN
AGND
Lch-IN
AGND
Rch-IN
BIAS+5V
HMUTE
MIC-DATA
2131X
RSTX
DVDKPX
4448X
X2FS
ZEROX
DMIX
MCK
LRCK
BCK
ADATA3
ADATA1
SDATA
SCLK
DA1CSX
DA3CSX
GND
CNX01
SOCKET-FFC-13P
VIDEO-I/F
NC
NC
NTPALX
S1
DGND
Y-INPUT
VGND
CB-INPUT
VGND
C-INPUT
VGND
CR-INPUT
VGND
COMPONENT
LPF-CIRCUIT

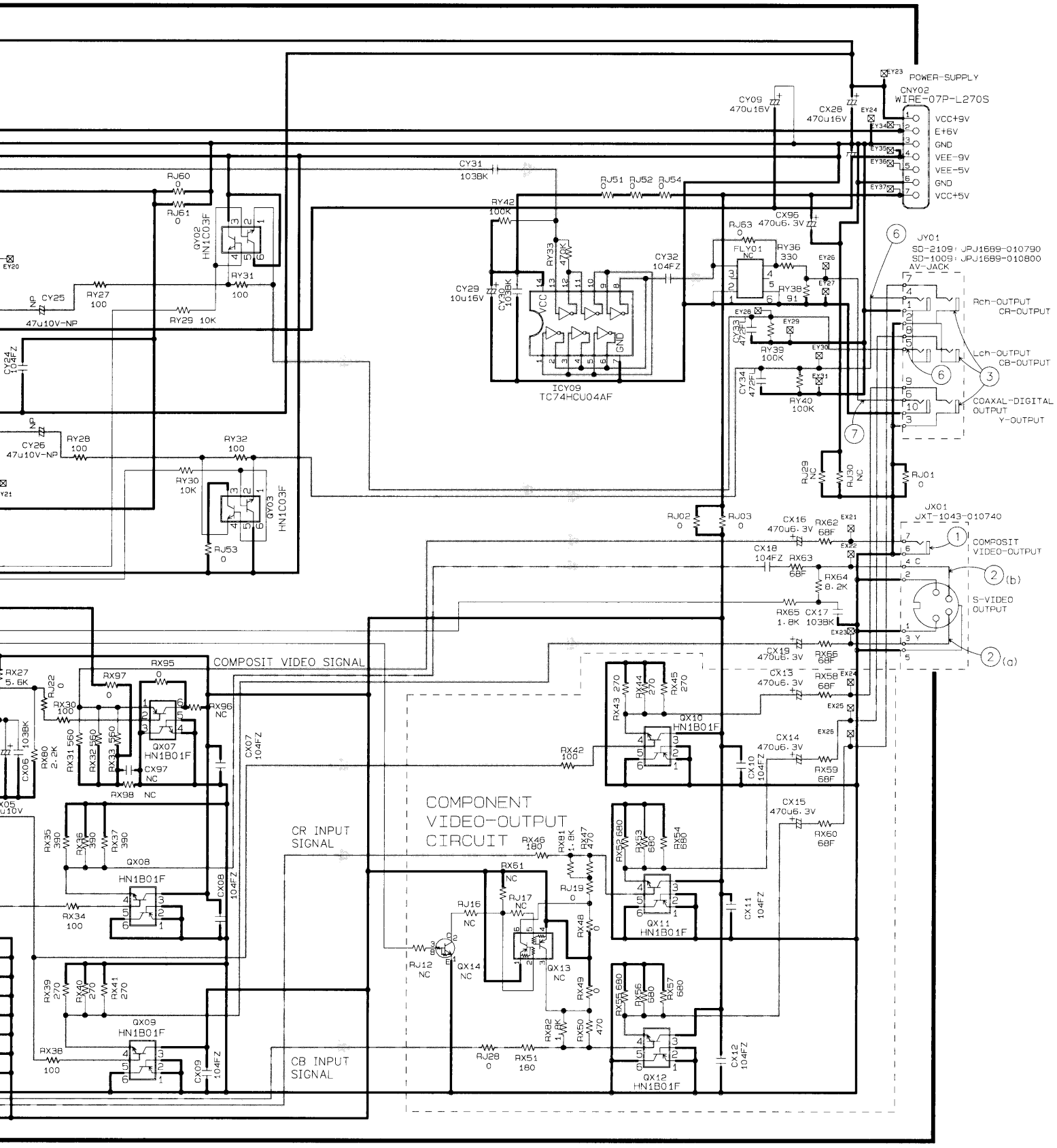
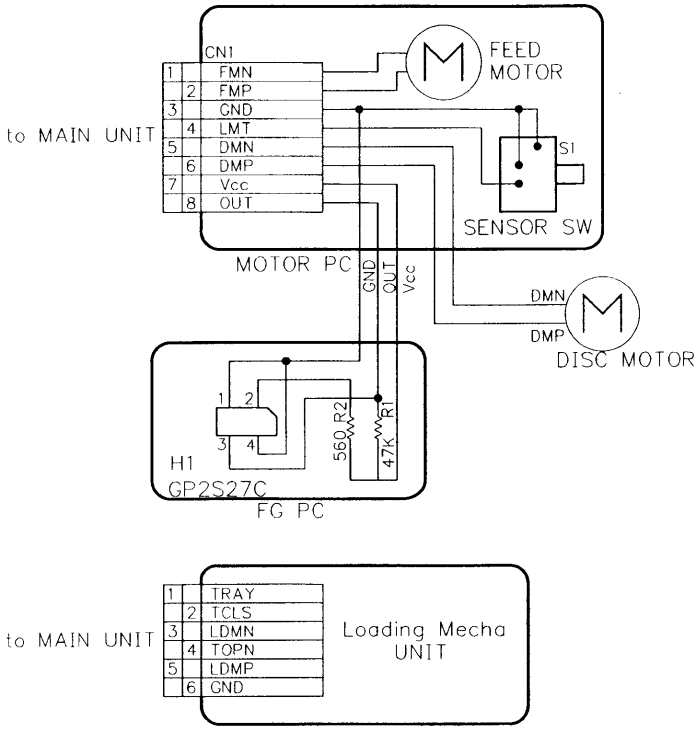
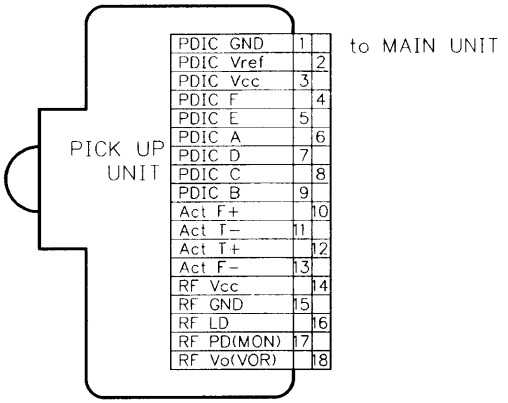

POWER-SUPPLY
CNY02
WIRE-07P-L270S
VCC+9V
E+6V
GND
VEE-9V
VEE-5V
GND
VCC+5V
JY01
SD-2109: JPJ1689-010790
SD-1009: JPJ1689-010800
AV-JACK
Rch-OUTPUT
CR-OUTPUT
Lch-OUTPUT
CB-OUTPUT
COAXAL-DIGITAL OUTPUT
Y-OUTPUT
JX01
JXT-1043-010740
COMPOSIT VIDEO-OUTPUT
S-VIDEO OUTPUT
ICY09
TC74HCU04AF
COMPOSIT VIDEO SIGNAL
CR INPUT SIGNAL
CB INPUT SIGNAL
COMPONENT VIDEO-OUTPUT CIRCUIT
HN1B01F
HN1C03F

Fig. 3-5-7

5-5. Motor System Circuit Diagram

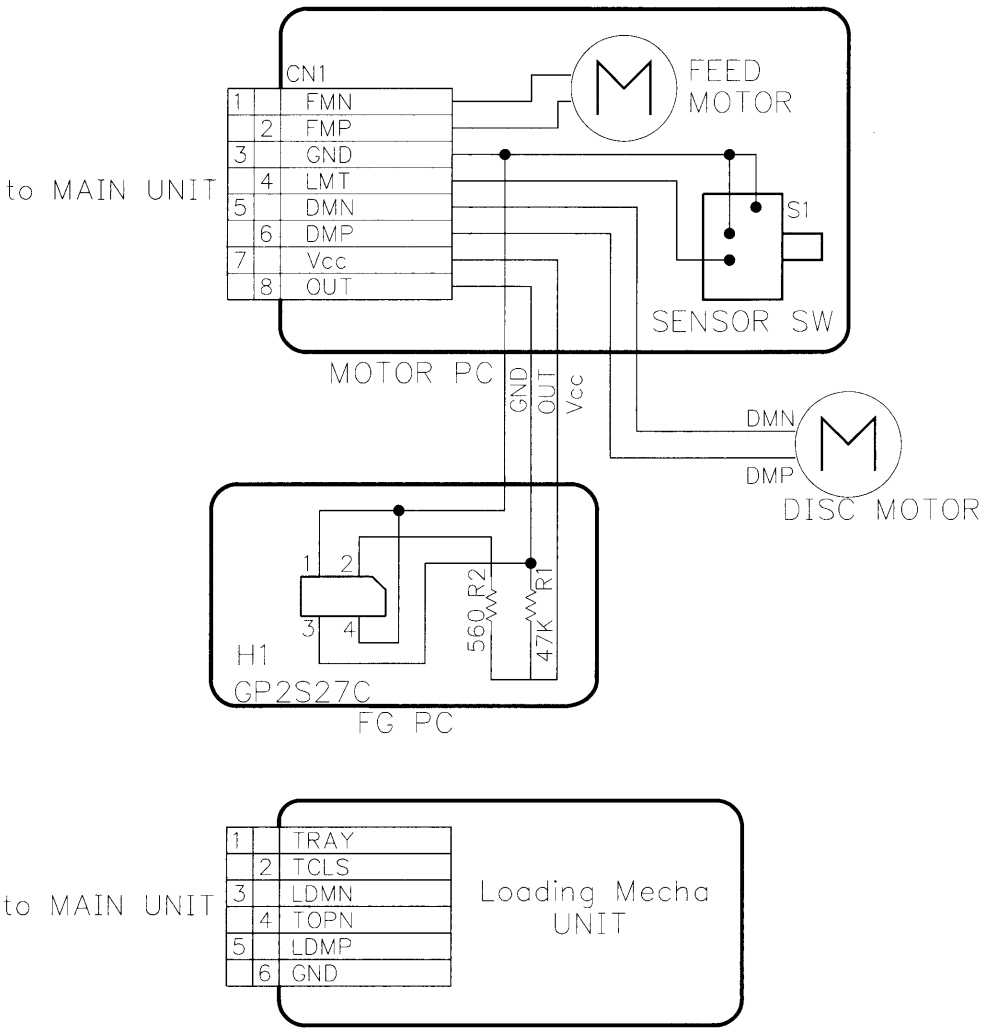


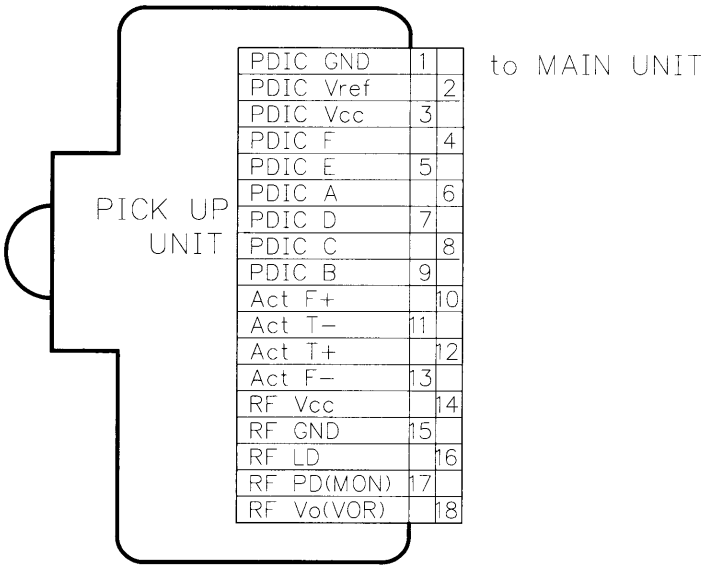


Part No.	Location
CN1	B3
R1	D4
R2	D3
S1	C4

Fig. 3-5-8

5-5. Motor System Circuit Diagram





Part No.	Location
CN1	B3
R1	D4
R2	D3
S1	C4

Fig. 3-5-8

6. PC BOARDS

6-1. Power Supply PC Board

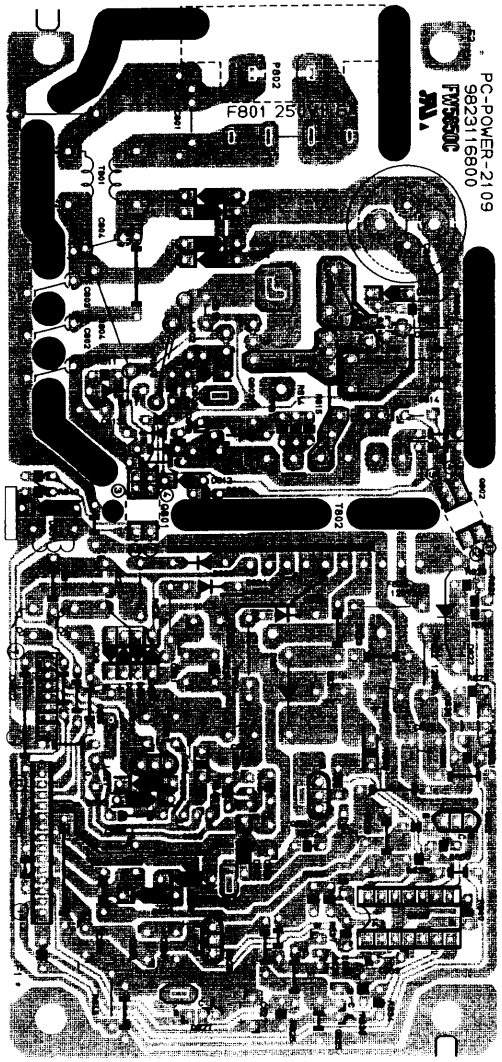


Fig. 3-6-1 EU02 Power Supply PC Board (Bottom side)

Part No.	Location	Part No.	Location
C801	B2	F822	E3
C802	C1	F823	E3
C803	C1	L801	C3
C804	C2	L802	C2
C805	C3	L821	F2
C806	C3	P802	B2
C808	C3	Q801	D2
C809	D2	Q802	D3
C810	C2	Q803	D2
C811	D1	Q821	E3
C812	D3	Q822	F3
C813	D2	Q823	G2
C814	D3	Q824	F2
C821	E3	Q825	G3
C822	E3	Q826	G3
C823	E3	Q827	G2
C824	E2	Q828	F3
C825	E2	Q829	F2
C826	F2	Q830	F2
C827	G2	Q831	F2
C828	F2	R801	B2
C829	F3	R802	C3
C830	F2	R803	D3
C831	E2	R804	C2
C833	E3	R805	C3
C834	E2	R806	C3
C835	E2	R807	D2
C836	E2	R808	C2
C837	E2	R809	D2
C838	F2	R811	C2
C839	G3	R813	D2
C840	F1	R814	D3
CN801	F1	R815	D3
CN802	E1	R821	E3
D802	C2	R822	E3
D803	C2	R823	E3
D804	C2	R824	E2
D805	C2	R825	G2
D806	C3	R826	E2
D807	D2	R830	E3
D808	D2	R831	F3
D809	C3	R832	F3
D810	D2	R833	F3
D811	D2	R834	G3
D812	D2	R835	G3
D821	E2	R836	G3
D822	E3	R837	F3
D823	E3	R838	F3
D824	E2	R839	F3
D825	E2	R840	F3
D826	F2	R841	D1
D827	E2	R842	D1
D828	E1	R843	F2
D829	E2	R844	F2
D830	E3	R845	G1
D831	D1	R846	F3
D832	F2	RF821	E2
D833	F2	S810	E1
D834	E2	T801	B2
D835	F1	T802	D3
D836	F2		

6-2. Power Switch PC Board

The parts location list shows ex. A1/B1= top side/bottom side.

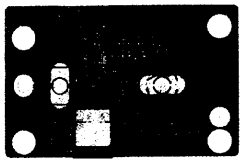


Fig. 3-6-2 EU04
Power Switch PC Board
(Top side)

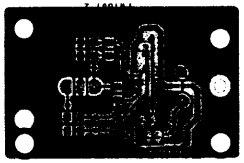
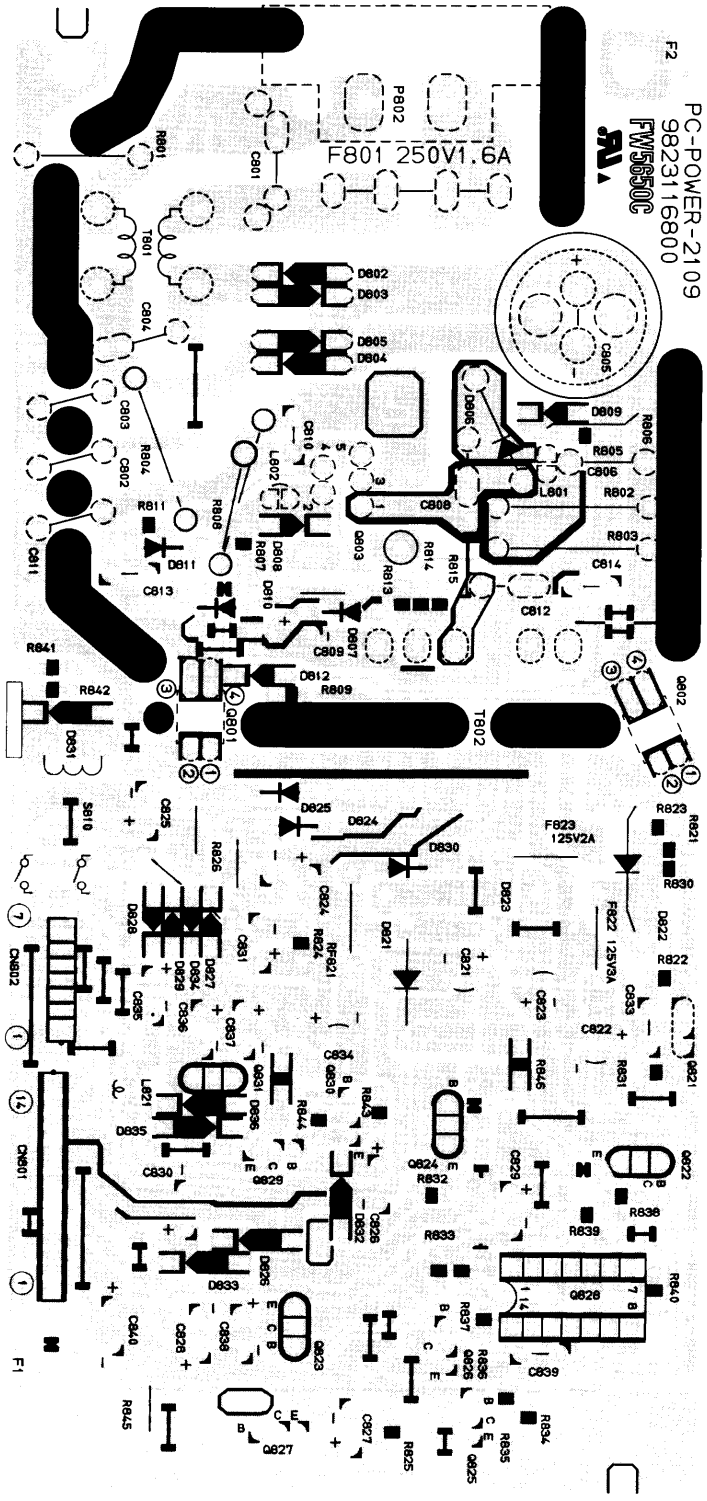


Fig. 3-6-3 EU04
Power Switch PC Board
(Bottom side)

Part No.	Location
CN103	B6/ –
D141	B7/ –
Q141	– /B9
Q142	– /B8
R141	– /B8
R142	– /B8
R143	– /B8
R144	– /B8
R145	– /B8
R146	– /B8
S141	B6/ –

6. PC BOARDS

6-1. Power Supply PC Board



Part No.	Location	Part No.	Location
C801	B2	F822	E3
C802	C1	F823	E3
C803	C1	L801	C3
C804	C2	L802	C2
C805	C3	L821	F2
C806	C3	P802	B2
C808	C3	Q801	D2
C809	D2	Q802	D3
C810	C2	Q803	D2
C811	D1	Q821	E3
C812	D3	Q822	F3
C813	D2	Q823	G2
C814	D3	Q824	F2
C821	E3	Q825	G3
C822	E3	Q826	G3
C823	E3	Q827	G2
C824	E2	Q828	F3
C825	E2	Q829	F2
C826	F2	Q830	F2
C827	G2	Q831	F2
C828	F2	R801	B2
C829	F3	R802	C3
C830	F2	R803	D3
C831	E2	R804	C2
C833	E3	R805	C3
C834	E2	R806	C3
C835	E2	R807	D2
C836	E2	R808	C2
C837	E2	R809	D2
C838	F2	R811	C2
C839	G3	R813	D2
C840	F1	R814	D3
CN801	F1	R815	D3
CN802	E1	R821	E3
D802	C2	R822	E3
D803	C2	R823	E3
D804	C2	R824	E2
D805	C2	R825	G2
D806	C3	R826	E2
D807	D2	R830	E3
D808	D2	R831	F3
D809	C3	R832	F3
D810	D2	R833	F3
D811	D2	R834	G3
D812	D2	R835	G3
D821	E2	R836	G3
D822	E3	R837	F3
D823	E3	R838	F3
D824	E2	R839	F3
D825	E2	R840	F3
D826	F2	R841	D1
D827	E2	R842	D1
D828	E1	R843	F2
D829	E2	R844	F2
D830	E3	R845	G1
D831	D1	R846	F3
D832	F2	RF821	E2
D833	F2	S810	E1
D834	E2	T801	B2
D835	F1	T802	D3
D836	F2		

Fig. 3-6-1 EU02 Power Supply PC Board (Bottom side)

6-2. Power Switch PC Board

The parts location list shows ex.
A1/B1= top side/bottom side.

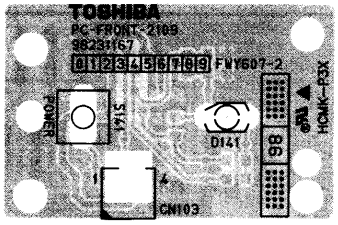


Fig. 3-6-2 EU04
Power Switch PC Board
(Top side)

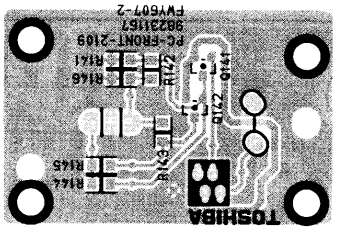


Fig. 3-6-3 EU04
Power Switch PC Board
(Bottom side)

Part No.	Location
CN103	B6/ –
D141	B7/ –
Q141	– /B9
Q142	– /B8
R141	– /B8
R142	– /B8
R143	– /B8
R144	– /B8
R145	– /B8
R146	– /B8
S141	B6/ –

Location
E3
E3
C3
C2
F2
B2
D2
D3
D2
E3
F3
G2
F2
G3
G3
G2
F3
F2
F2
F2
B2
C3
D3
C2
C3
C3
D2
C2
D2
C2
D2
D3
D3
E3
E3
E3
E2
G2
E2
E3
F3
F3
F3
G3
G3
G3
F3
F3
F3
F3
D1
D1
F2
F2
G1
F3
E2
E1
B2
D3

6-3. Main PC Board

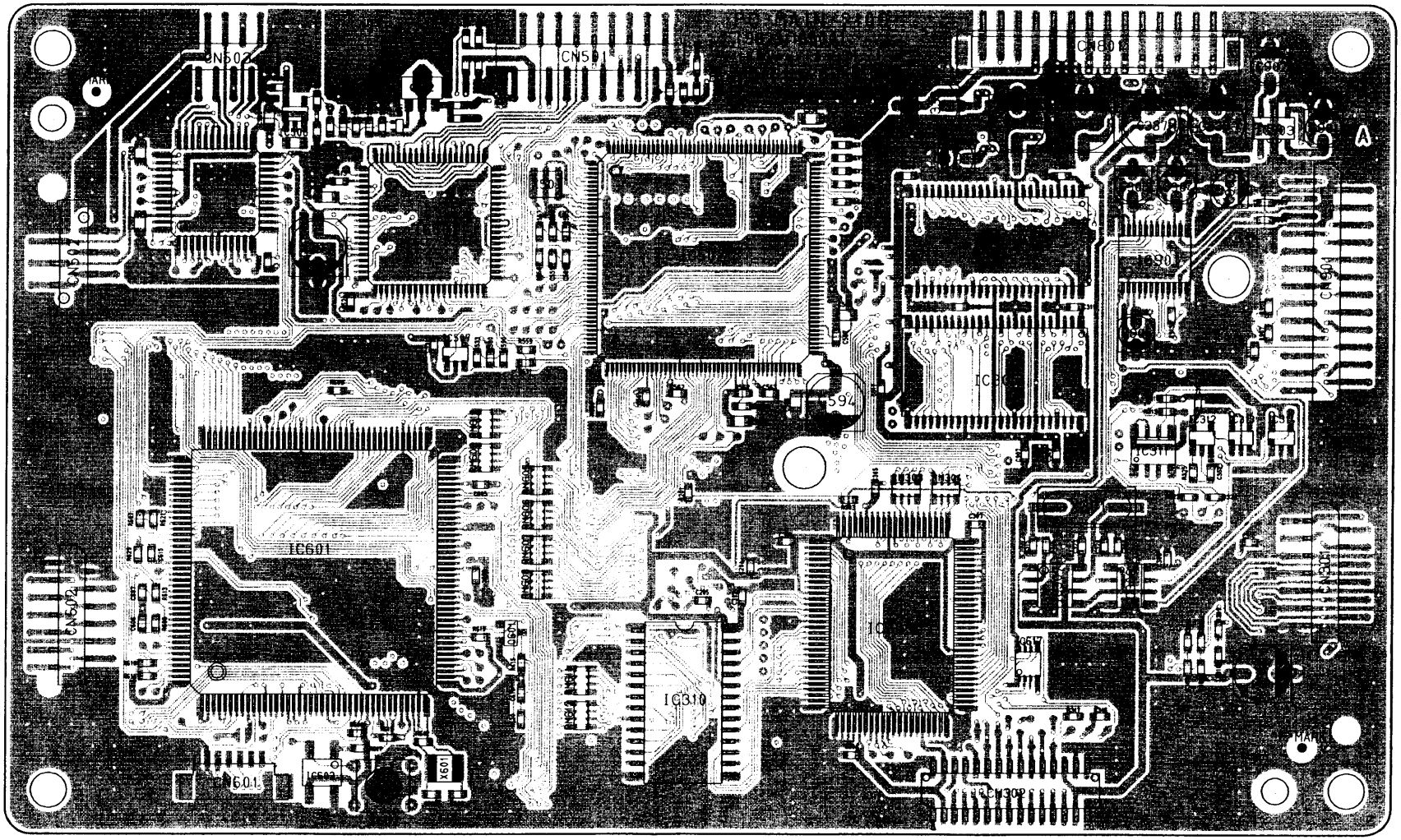


Fig. 3-6-4 EU01 Main PC Board (Top pattern and Top parts location diagram)

6-3. Main PC Board

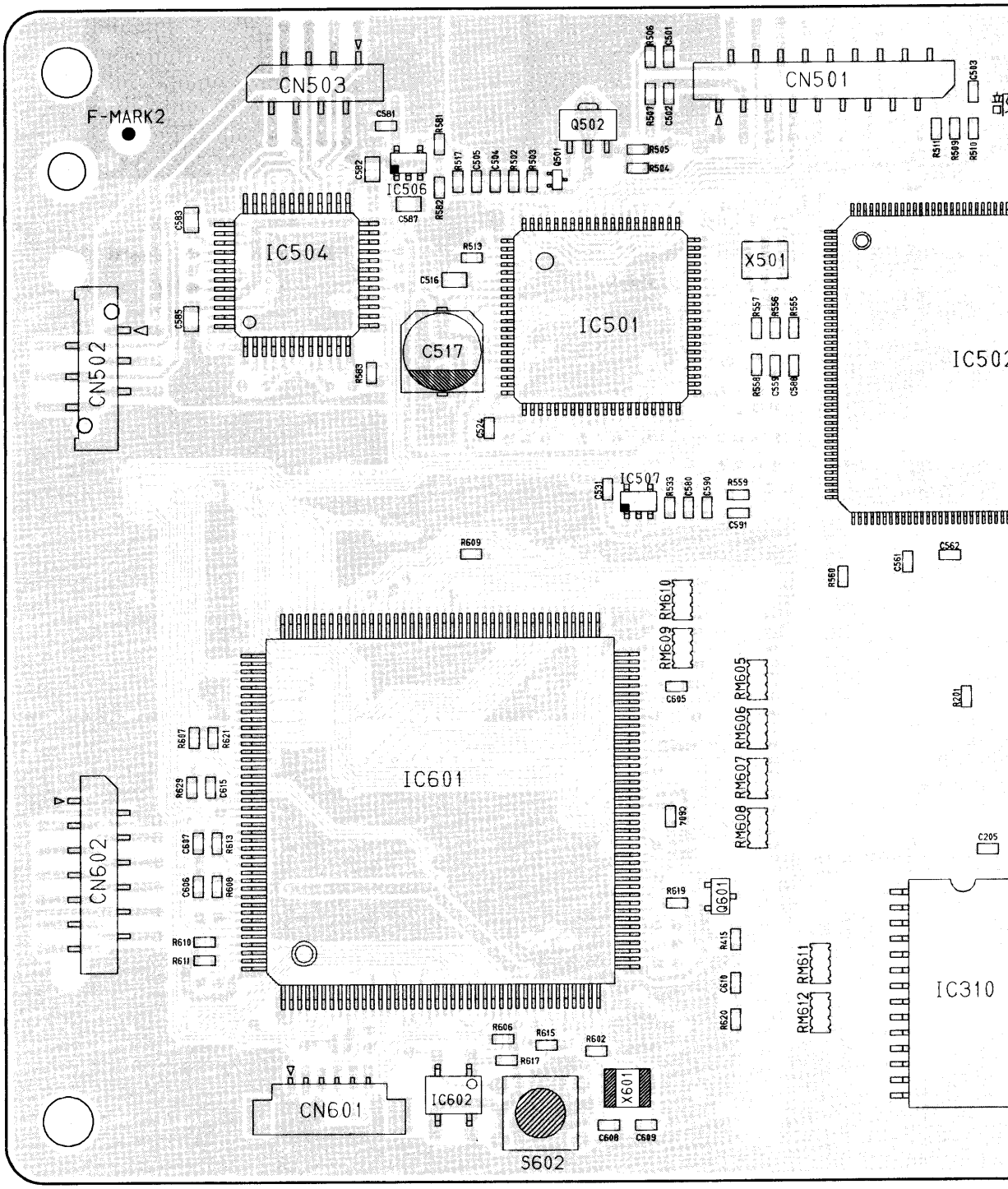
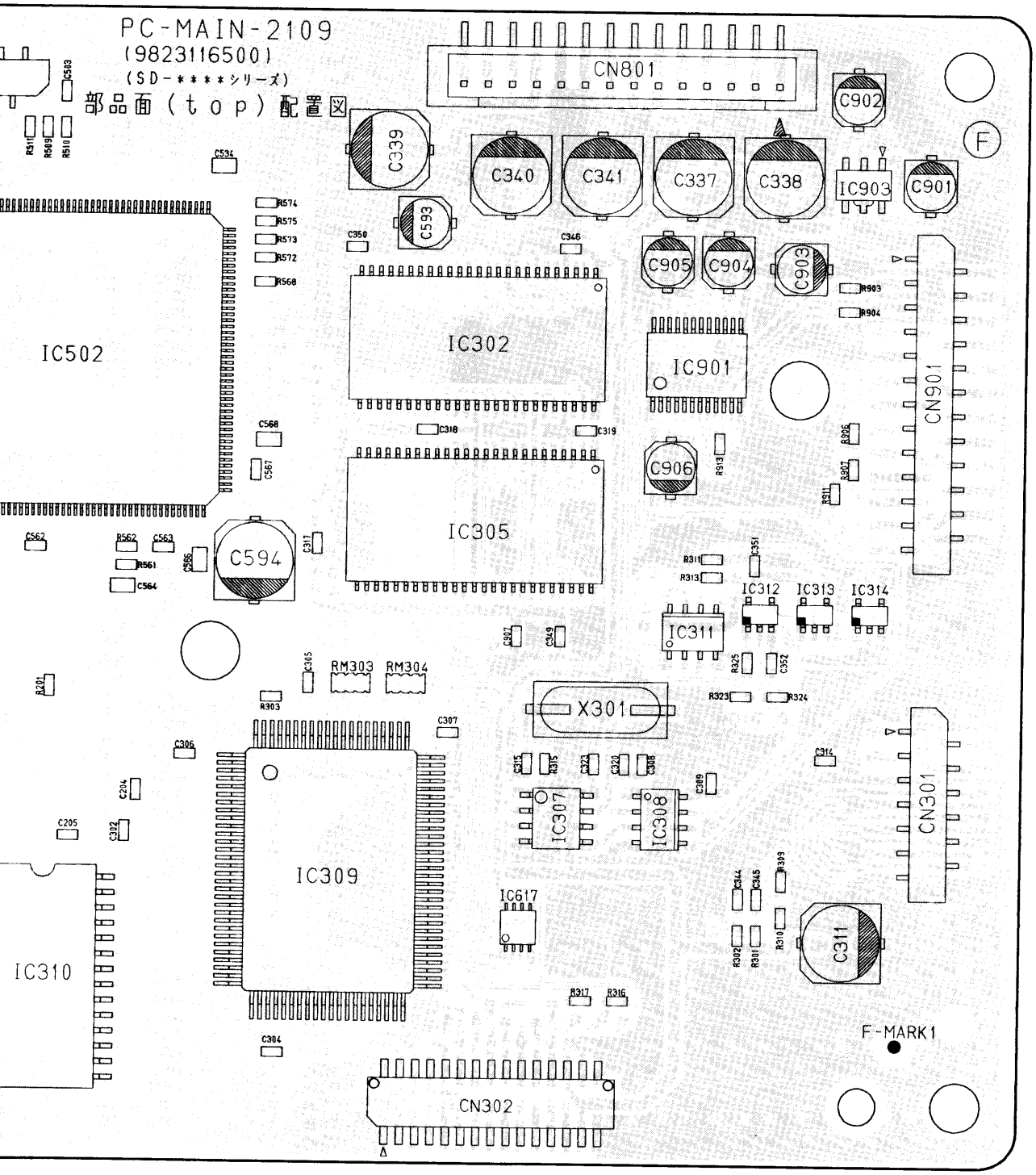


Fig. 3-6-4 EU01 Main PC Board (Top pa



(Top pattern and Top parts location diagram)

Part No.	Location
C201	–/F5
C202	–/E6
C203	–/D6
C204	E6/ –
C205	E6/ –
C301	–/E5
C302	E6/ –
C303	–/F4
C304	F7/ –
C305	D7/ –
C306	E6/ –
C307	E7/ –
C308	E8/ –
C309	E8/ –
C310	–/F2
C311	F9/ –
C312	–/E3
C313	–/E2
C314	E9/ –
C315	E8/ –
C316	–/B3
C317	D7/ –
C318	C7/ –
C319	C8/ –
C320	E8/ –
C321	–/D3
C322	–/E2
C323	E8/ –
C335	–/E2
C336	–/E2
C337	B8/ –
C338	B9/ –
C339	B7/ –
C340	B8/ –
C341	B8/ –
C344	E9/ –
C345	E9/ –
C346	B8/ –
C347	–/C3
C349	D8/ –
C350	B7/ –
C351	D9/ –
C352	D9/ –
C501	B4/ –
C502	B4/ –
C503	B6/ –
C504	B4/ –
C505	B3/ –
C506	–/C7
C507	–/C7
C508	–/C7
C509	–/C7
C510	–/C7
C511	–/C7
C512	–/C7
C513	–/B7
C514	–/B7
C515	–/B7
C516	C3/ –
C517	C3/ –
C518	–/C7
C519	–/C7
C520	–/C7
C521	–/C7
C522	–/C7
C523	–/C7
C524	C4/ –
C525	–/C7
C526	–/C7
C527	–/C7
C528	–/C7
C529	–/C7
C530	–/C7
C531	D4/ –
C532	–/B5
C533	–/B5
C534	B6/ –
C535	–/C5
C536	–/C5
C537	–/B5
C538	–/B5
C539	–/B5
C540	–/B5
C541	–/B5
C542	–/C5
C543	–/B5
C544	–/B5
C545	–/B5
C546	–/C6
C547	–/C6
C548	–/C6
C549	–/C5
C550	–/C5
C551	–/B5
C552	–/C6
C553	–/B6
C554	–/B6
C555	–/C6
C556	–/B6
C557	–/C6
C558	–/C6
C559	C5/ –
C560	–/C6
C561	D5/ –
C562	D5/ –
C563	D6/ –
C564	D6/ –
C565	–/C5
C566	D6/ –
C567	D6/ –
C568	C6/ –
C569	–/C6
C570	–/C6
C571	–/C4
C572	–/B5
C573	–/C5
C574	–/C5
C575	–/C5
C576	–/B4
C577	–/B4
C578	–/B4
C579	–/C4
C580	D4/ –
C581	B3/ –
C582	B3/ –
C583	B2/ –
C584	–/C9
C585	C2/ –
C586	–/C7
C587	B3/ –
C588	C5/ –
C590	D4/ –
C591	D5/ –
C592	–/B4
C593	B7/ –
C594	D6/ –
C601	–/F8
C602	–/D7
C603	–/F7
C604	E4/ –
C605	E4/ –
C606	E2/ –
C607	E2/ –
C608	F4/ –
C609	F4/ –
C610	F5/ –
C611	–/F7
C615	E2/ –
C616	–/E9
C617	–/F9
C618	–/F9
C619	–/F9
C621	–/D9
C622	–/B3
C623	–/B4
C624	–/B4
C901	B9/ –
C902	B9/ –
C903	C9/ –
C904	C8/ –
C905	C8/ –
C906	D8/ –
C907	D8/ –
C908	–/D3
C909	–/C3
C910	–/C2
CN301	E9/ –
CN302	F7/ –
CN501	B5/ –
CN502	C2/ –
CN503	B3/ –
CN601	F3/ –
CN602	E2/ –
CN603	–/D6
CN801	B8/ –
CN901	C9/ –
FL301	–/B3
FL302	–/B2
FL303	–/B3
FL304	–/B3
FL305	–/B3
FL308	–/F2
FL501	–/B3
FL502	–/B3
IC201	–/E5
IC202	–/F5
IC301	–/C3
IC302	C7/ –
IC305	D7/ –
IC306	–/E2
IC307	E8/ –
IC308	E8/ –
IC309	E7/ –
IC310	E6/ –
IC311	D8/ –
IC312	D9/ –
IC313	D9/ –
IC314	D9/ –
IC501	C4/ –
IC502	C6/ –
IC503	–/C5
IC504	C3/ –
IC506	B3/ –
IC507	D4/ –
IC508	–/B4
IC601	E3/ –
IC602	F3/ –
IC607	–/F7
IC613	–/F8
IC614	–/D8
IC615	–/E7
IC616	–/F8
IC617	E8/ –
IC618	–/E8
IC901	C8/ –
IC902	–/C3
IC903	B9/ –
IC904	–/C2
IC905	–/B2
Q501	B4/ –
Q502	B4/ –
Q503	–/B8
Q601	E4/ –
R201	E6/ –
R301	F9/ –
R302	F9/ –
R303	E7/ –
R305	–/E1
R306	–/E1
R307	–/E1
R308	–/E1
R309	E9/ –
R310	F9/ –
R311	D8/ –
R312	–/C2
R313	D8/ –
R314	–/D3
R315	E8/ –
R316	E8/ –
R317	E8/ –
R319	–/E2
R320	–/D3
R321	–/E3
R323	E8/ –
R324	E9/ –
R325	D9/ –
R326	–/E1
R327	–/E1
R328	–/E1
R329	–/E3
R401	–/B8
R415	F5/ –
R450	–/B6
R451	–/C8
R452	–/C8
R501	–/C7
R502	B4/ –
R503	B4/ –
R504	B4/ –
R505	B4/ –
R506	B4/ –
R507	B4/ –
R508	–/B7
R509	B6/ –
R510	B6/ –
R511	B5/ –
R513	C3/ –
R514	–/C7
R515	–/C7
R516	–/C7
R517	B3/ –
R518	–/C7
R519	–/C7
R520	–/C7
R521	–/C7
R522	–/C7
R523	–/C7
R524	–/C7
R525	–/C7
R526	–/C7
R527	–/C7
R528	–/C7
R529	–/C7
R530	–/B5
R531	–/B5
R533	D4/ –
R534	–/B5
R535	–/B5
R536	–/C5
R537	–/B5
R538	–/B5
R539	–/C5
R540	–/C5
R541	–/B5
R542	–/B6
R543	–/B6
R544	–/B6
R545	–/B6
R546	–/B6
R547	–/B6
R548	–/B6
R549	–/B6
R550	–/C6
R551	–/B6
R552	–/B6
R553	–/C6
R554	–/C6
R555	C5/ –
R556	C5/ –
R557	C5/ –
R558	C5/ –
R559	D5/ –
R560	D5/ –
R561	D6/ –
R562	D6/ –
R563	–/C5
R564	–/C5
R565	–/C5
R566	–/C5
R567	–/C5
R568	C7/ –
R569	–/C5
R570	–/B5
R571	–/C4
R572	C7/ –
R573	C7/ –
R574	B7/ –
R575	B7/ –
R576	–/B4
R577	–/B4
R578	–/C4
R579	–/B4
R581	B3/ –
R582	B3/ –
R583	C3/ –
R584	–/C8
R585	–/C8
R586	–/C8
R587	–/C8
R588	–/C8
R589	–/C8
R590	–/C8
R591	–/C8
R592	–/C8
R593	–/C8
R594	–/C8
R595	–/C9
R596	–/C8
R597	–/C9
R598	–/C9
R599	–/B8
R601	–/D7
R602	F4/ –
R603	–/E9
R604	–/F8
R605	–/F8
R606	F4/ –
R607	E2/ –
R608	E2/ –
R609	D3/ –
R610	F2/ –
R611	F2/ –
R612	–/E9
R613	E2/ –
R614	–/E9
R615	F4/ –
R616	–/F8
R617	F4/ –
R618	–/F7
R619	E4/ –
R620	F5/ –
R621	E2/ –
R625	–/E9
R628	–/F8
R629	E2/ –
R630	–/F8
R640	–/E9
R642	–/E9
R643	–/E9
R644	–/E9
R645	–/E9
R646	–/F8
R901	–/C2
R902	–/D3
R903	C9/ –
R904	C9/ –
R905	–/C2
R906	C9/ –
R907	D9/ –
R908	–/D3
R909	–/D3
R910	–/D3
R911	D9/ –
R912	–/C2
R913	D8/ –
RM303	D7/ –
RM304	D7/ –
RM601	–/F7
RM602	–/E7
RM604	–/F8
RM605	D5/ –
RM606	E5/ –
RM607	E5/ –
RM608	E5/ –
RM609	D4/ –
RM610	D4/ –
RM611	F5/ –
RM612	F5/ –
RM903	–/C2
RM904	–/D2
RM905	–/C2
S602	G4/ –
X301	E8/ –
X501	C5/ –
X601	F4/ –

The parts location list shows ex. A1/B1= top side/bottom side.

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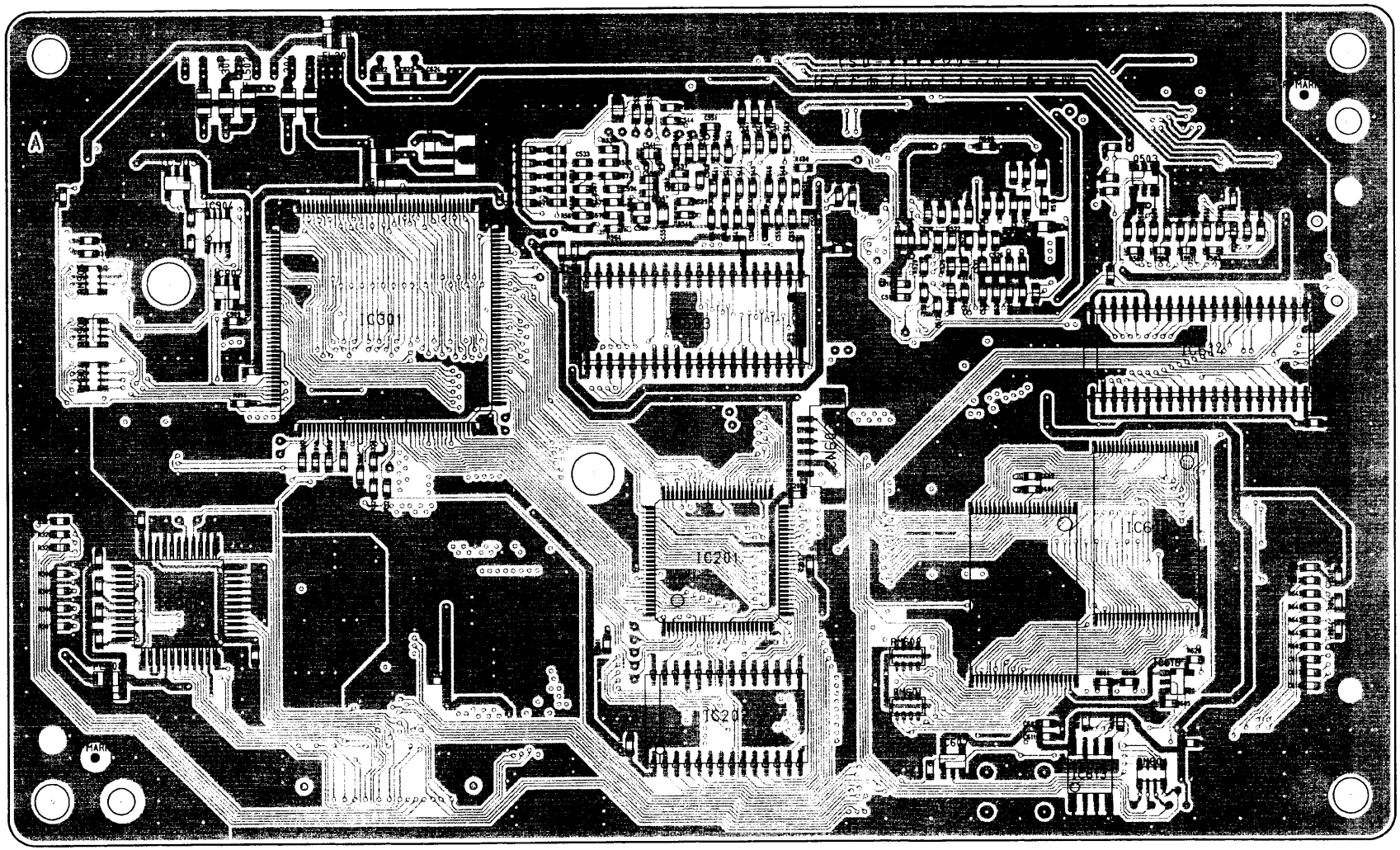


Fig. 3-6-5 EU01 Main PC Board (Bottom pattern and bottom parts location diagram)

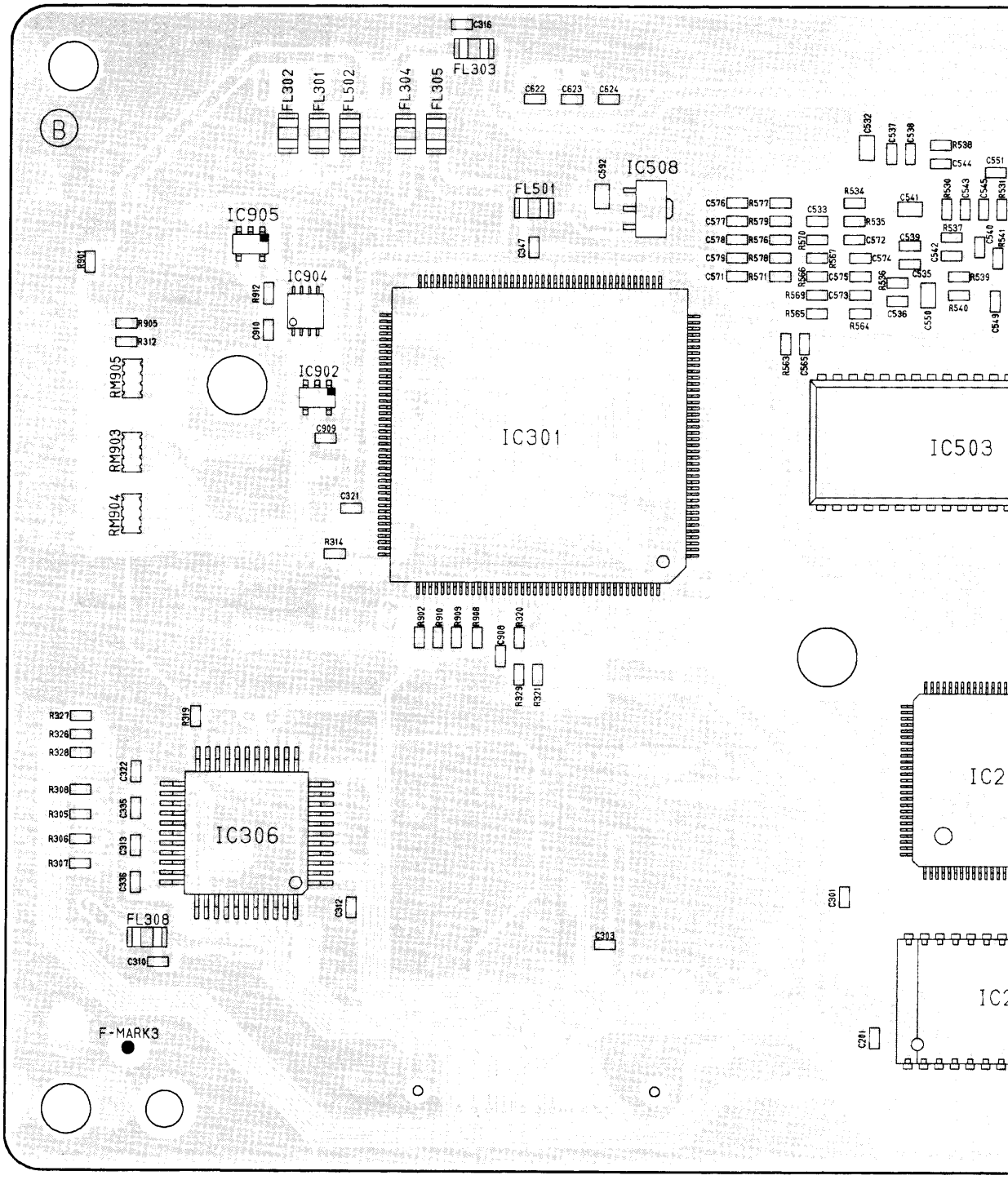
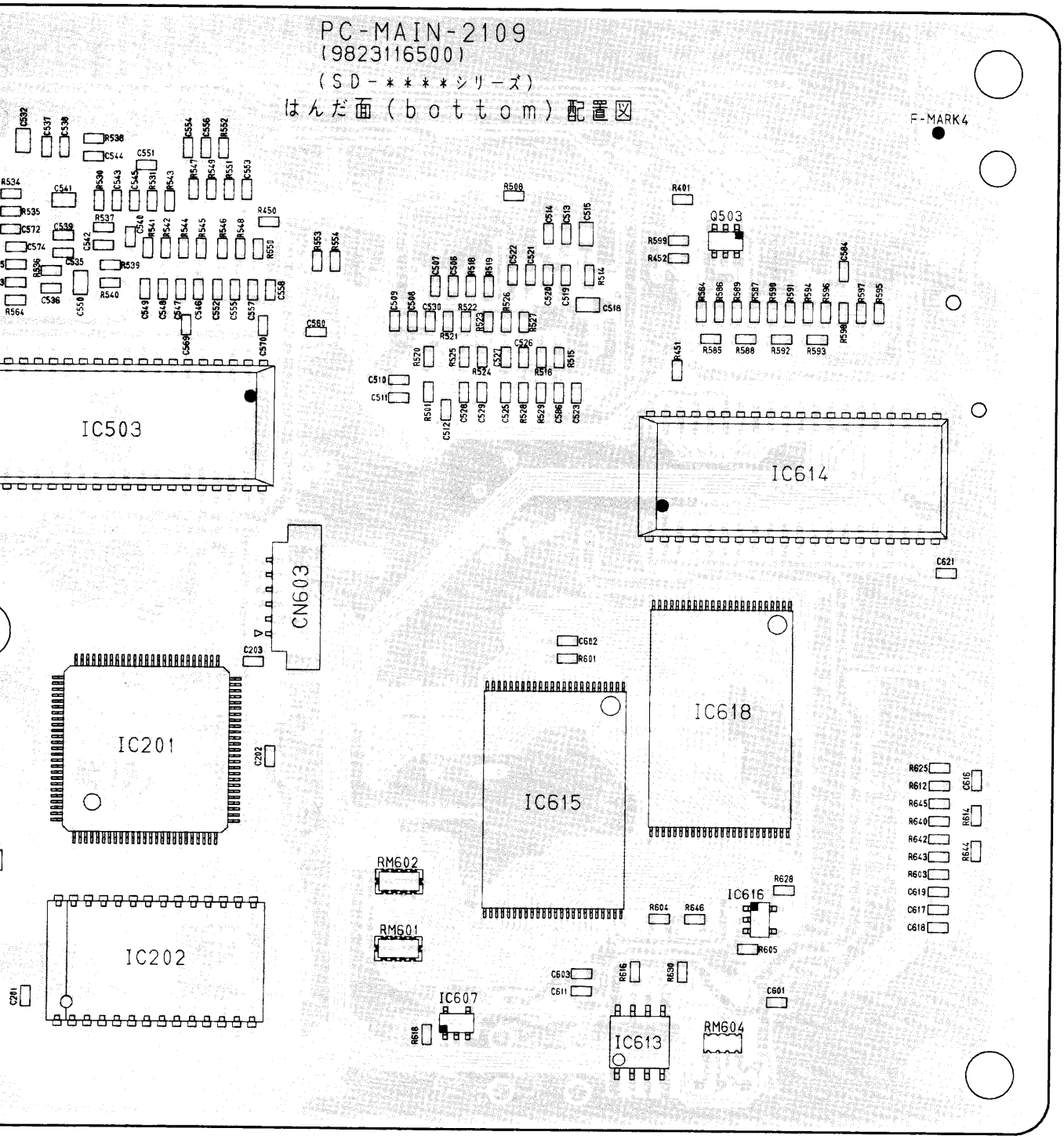


Fig. 3-6-5 EU01 Main PC Board (Bottom patt



ard (Bottom pattern and bottom parts location diagram)

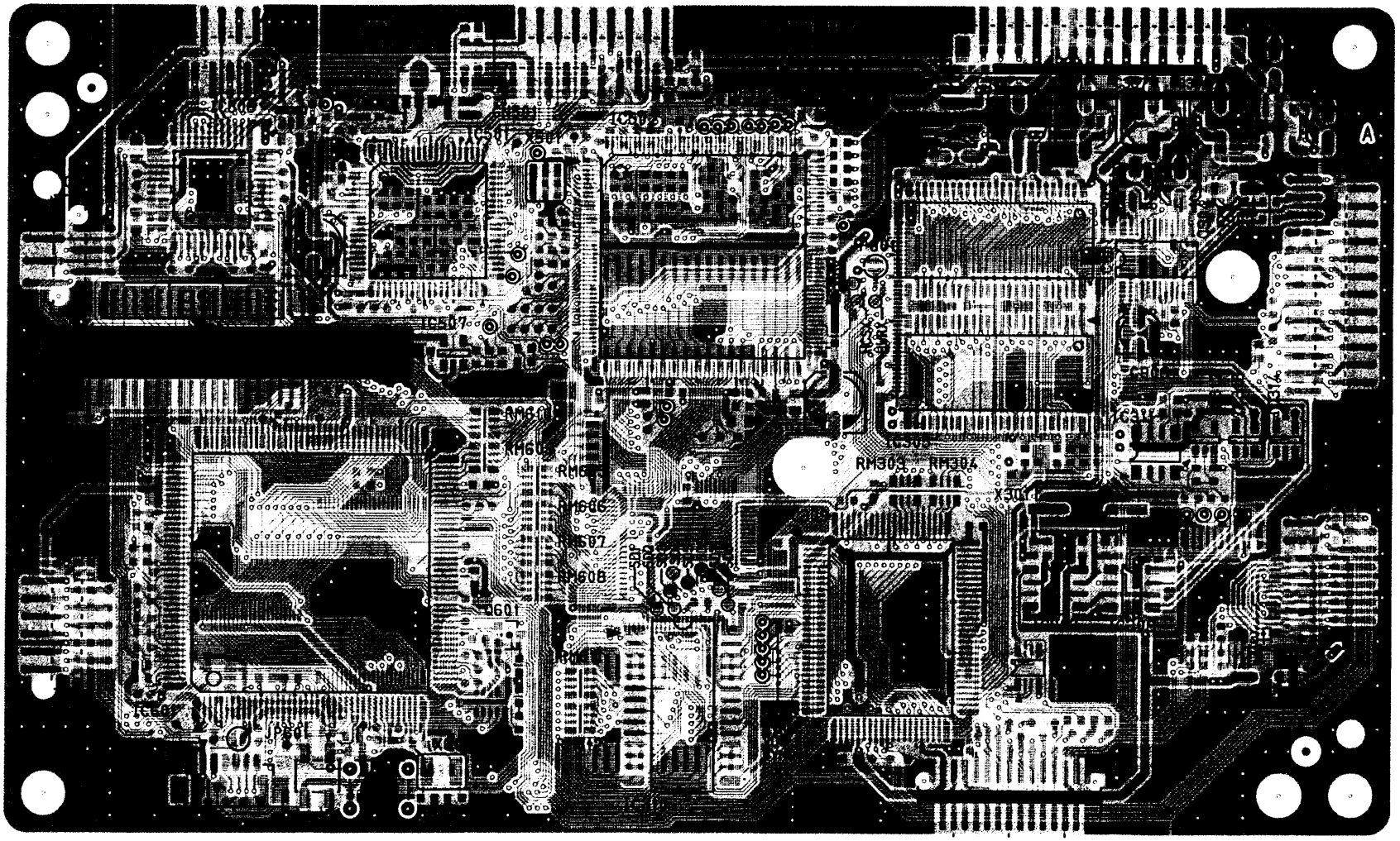


Fig. 3-6-6 EU01 Main PC Board (Top pattern, character/symbol and bottom pattern)

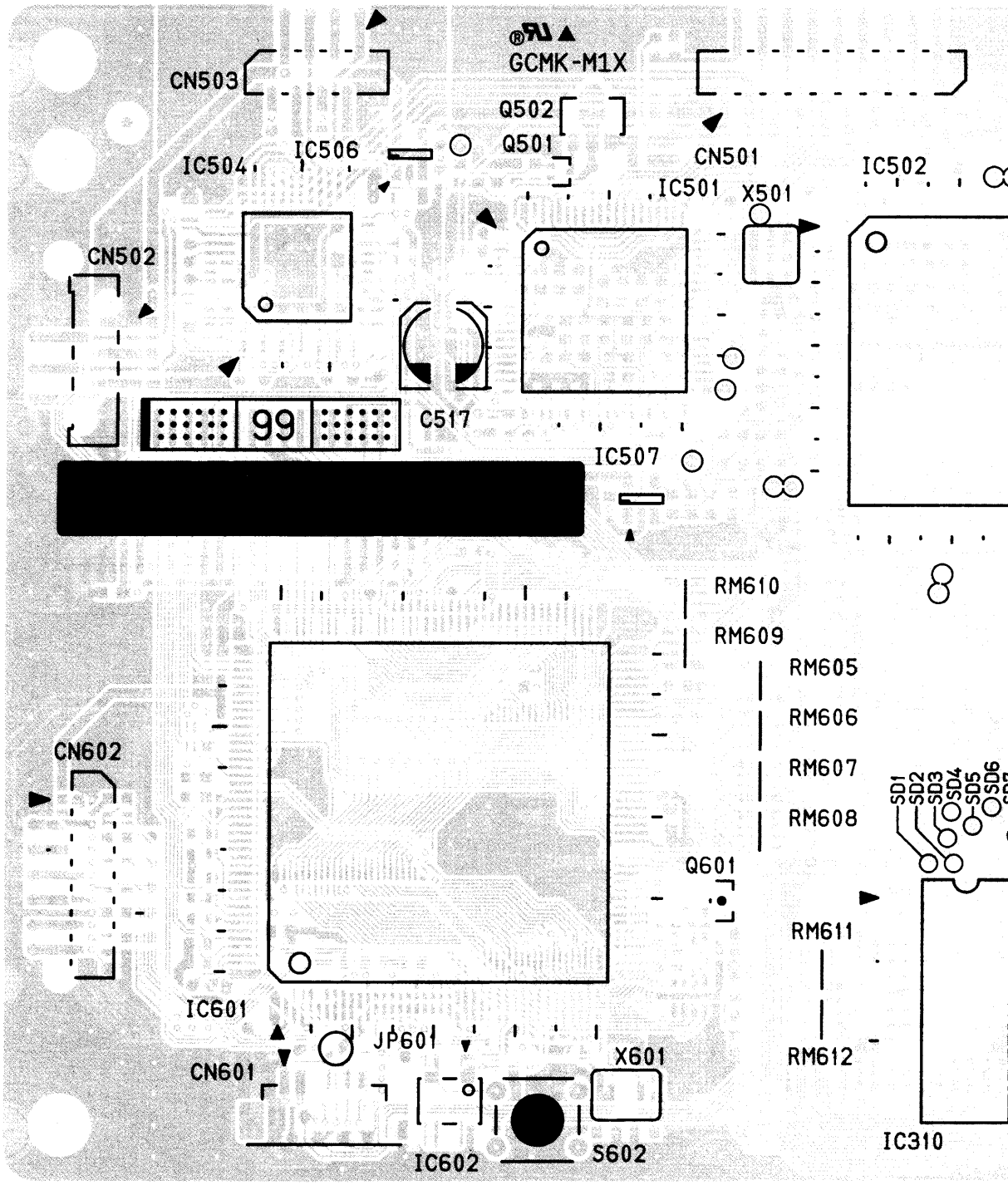
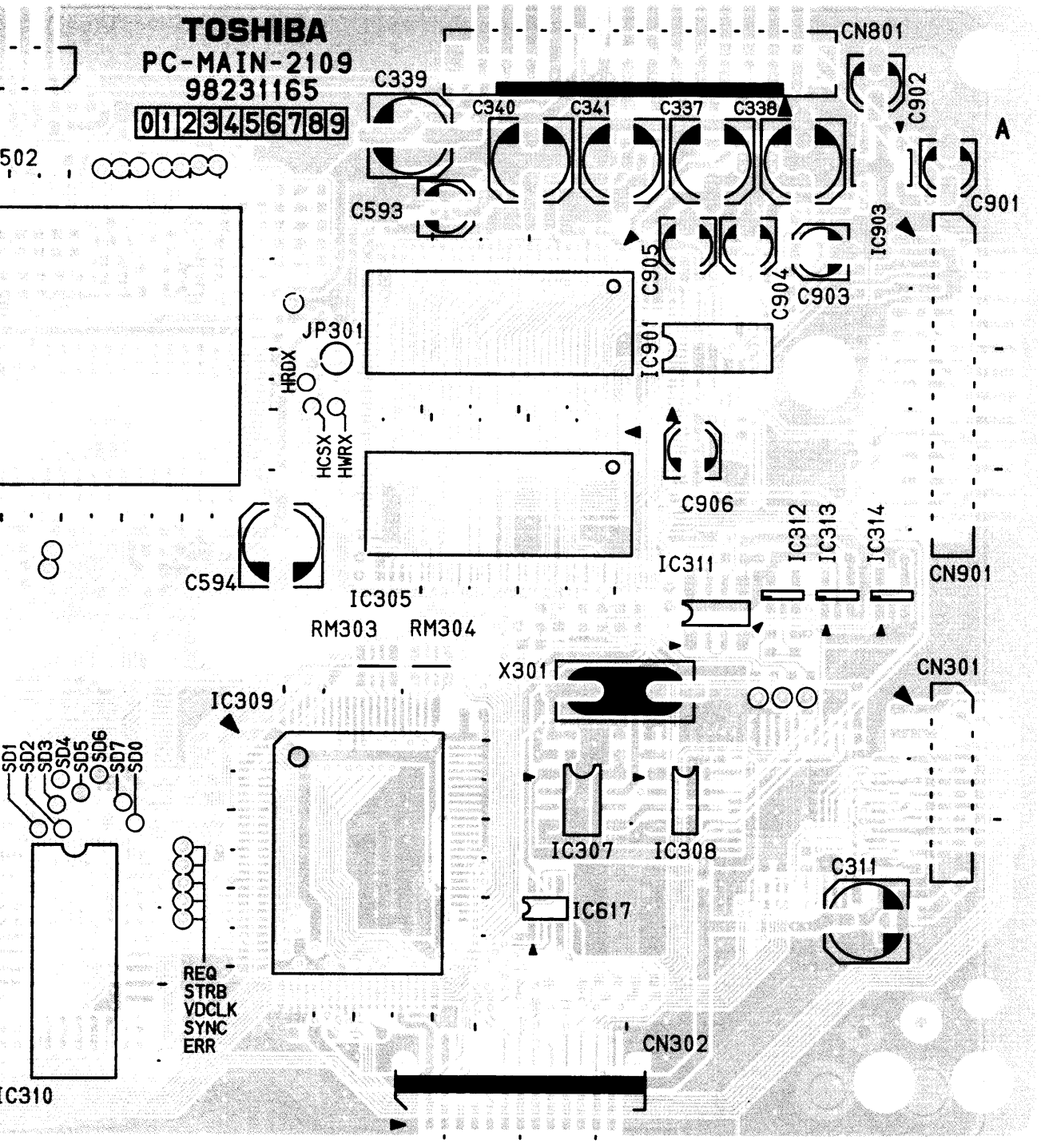


Fig. 3-6-6 EU01 Main PC Board (Top patter



1 (Top pattern, character/symbol and bottom pattern)

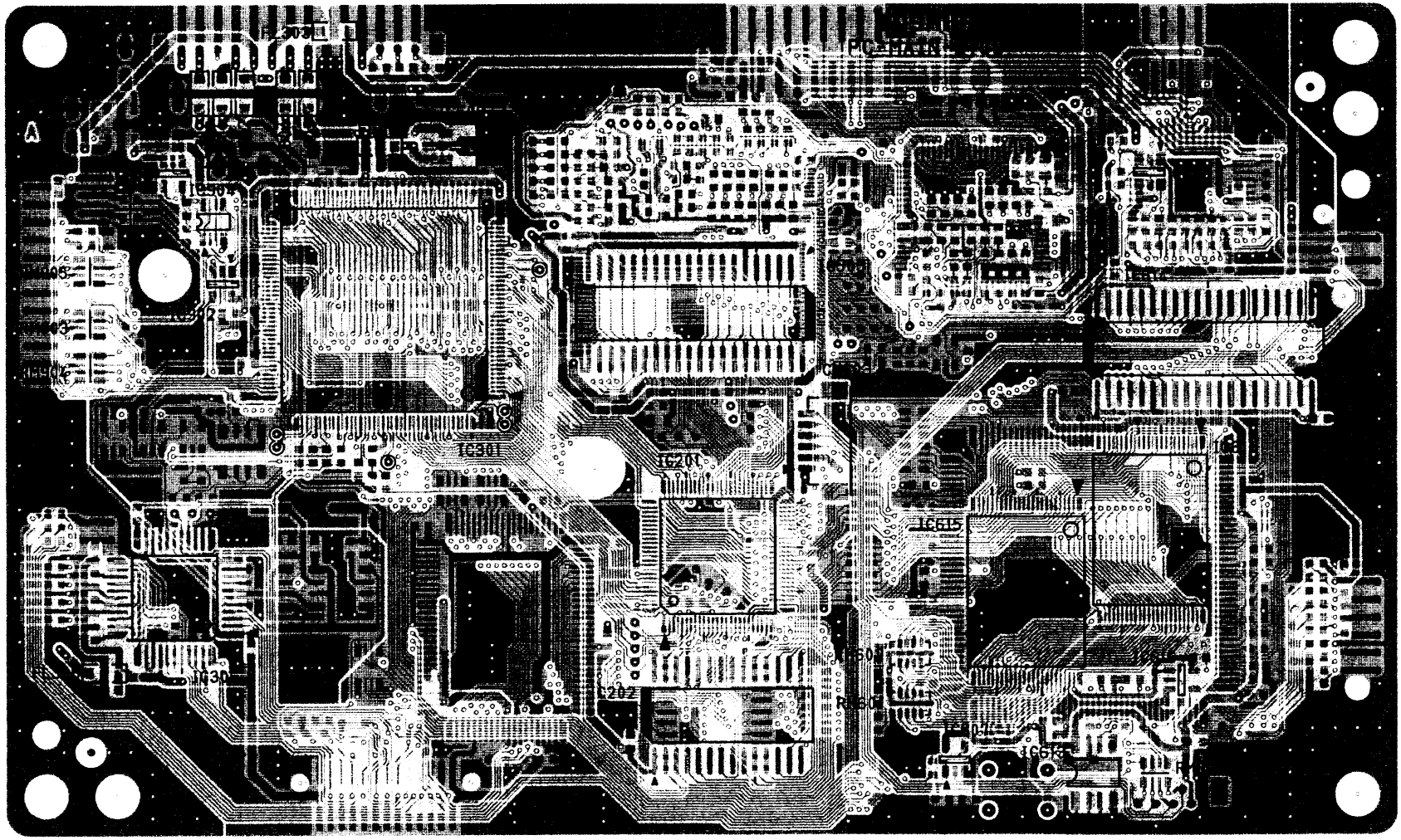


Fig. 3-6-7 EU01 Main PC Board (Bottom pattern, character/symbol and top pattern)

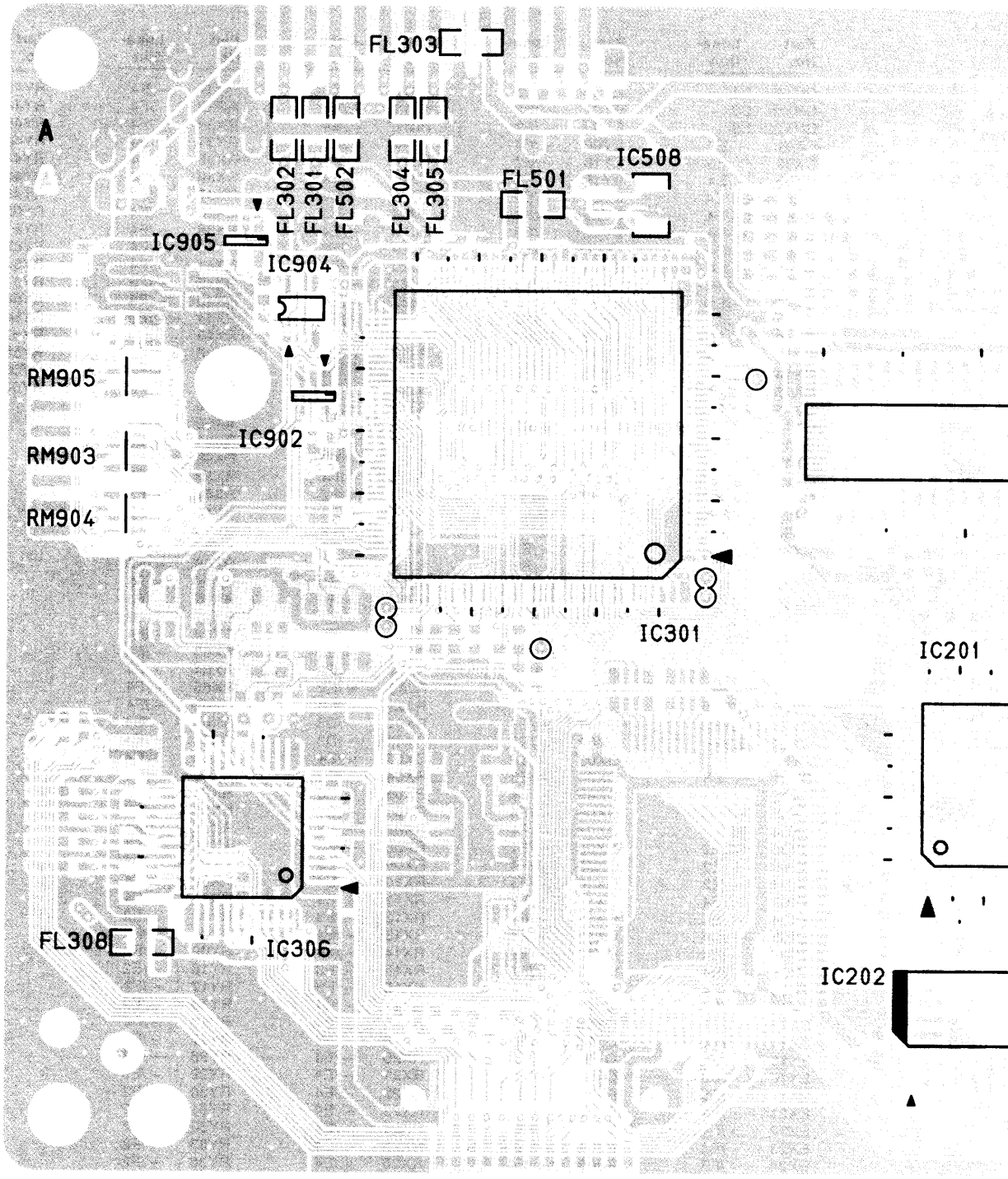
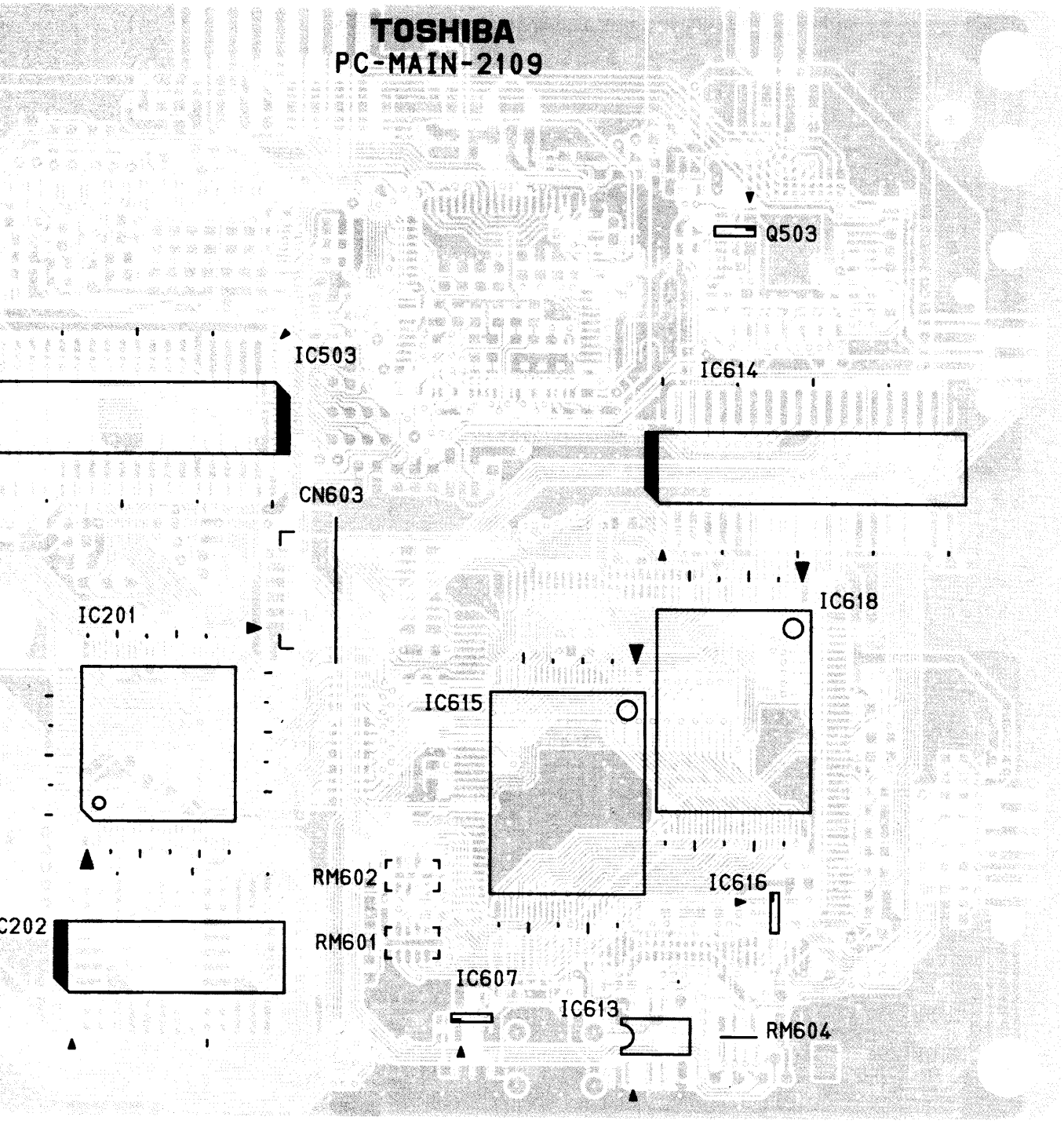


Fig. 3-6-7 EU01 Main PC Board (Bottom patt



oard (Bottom pattern, character/symbol and top pattern)

6-4. Output PC Board

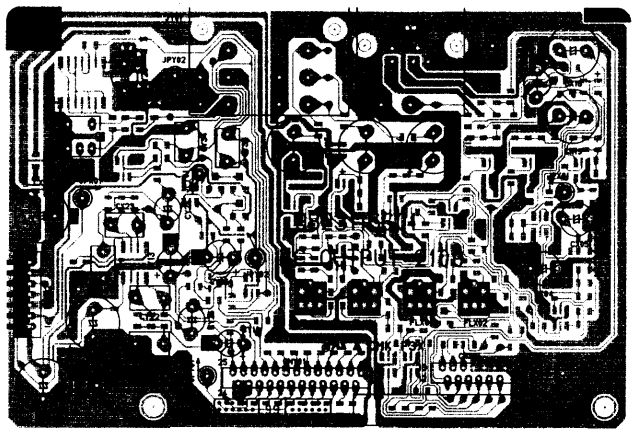


Fig. 3-6-8 EU05 Output PC Board (Top side)

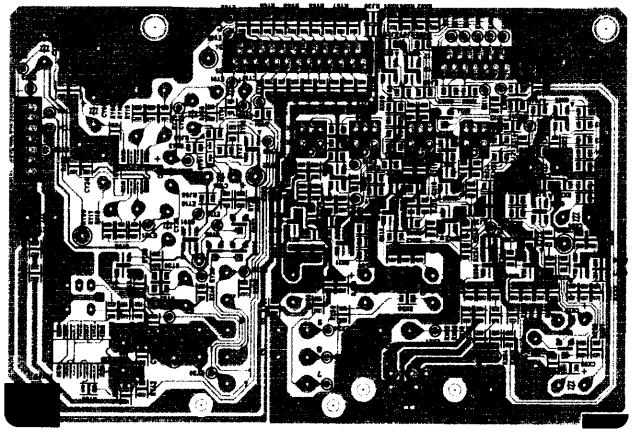


Fig. 3-6-9 EU05 Output PC Board (Bottom side)

The parts location list shows ex. A1/B1= top side/bottom side.

Part No.	Location
CNX01	C4/ –
CNY01	C3/ –
CNY02	C2/ –
CX01	– /E3
CX02	– /E3
CX03	– /E4
CX04	C4/E4
CX05	C4/F4
CX06	– /E4
CX07	– /E4
CX08	– /F4
CX09	– /F4
CX10	– /E3
CX11	– /E3
CX12	– /F3
CX13	B4/F3
CX14	B3/F3
CX15	B3/F3
CX16	B4/F4
CX17	– /F4
CX18	– /F4
CX19	B4/F4
CX28	C2/E2
CX96	B2/F2
CX97	– /F4
CX98	– /F4
CX99	B4/F4
CY09	C2/E2
CY10	C3/E3
CY13	C2/E2
CY15	C2/ –
CY19	C2/ –
CY22	C2/ –
CY23	C2/ –
CY24	– /E2
CY25	C2/E2
CY26	C2/F2
CY29	B2/ –
CY30	– /F2
CY31	– /E3
CY32	– /F2
CY33	B3/ –
CY34	B2/ –
CY36	C2/E2
CY69	– /E2
DY01	– /E2
EX02	– /E4
EX04	– /E4
EX06	– /E4
EX07	– /E4
EX08	– /E4
EX09	– /E4
EX10	– /E4
EX11	– /E4
EX14	– /F4
EX15	– /E4
EX16	– /E3
EX17	– /F3
EX21	– /F4
EX22	– /F4
EX23	– /F3
EX24	– /F3
EX25	– /F3
EX26	– /F3
EY01	– /E2
EY02	– /D3
EY03	– /E3
EY04	– /E2
EY05	– /E2
EY06	– /E3
EY18	– /E2
EY19	– /F2
EY20	– /E2
EY21	– /F2
EY23	– /E2
EY24	– /E2
EY26	– /F2
EY27	– /F2
EY28	– /E3
EY29	– /F3
EY30	– /F2
EY31	– /F2
EY33	– /F2
EY34	– /E2
EY35	– /E1
EY36	– /E2
EY37	– /E2
FLX01	C3/ –
FLX02	C4/ –
FLX03	C3/ –
FLX04	C3/ –
FLY01	B2/ –
ICY03	– /E2
ICY09	– /F2
JPX01	B2/ –
JPX01	B4/ –
JPY01	C2/ –
JPY01	B2/ –
JPY02	B2/ –
JPY02	C3/ –
JX01	B4/ –
JY01	B2/ –
QX01	– /E3
QX02	– /E3
QX03	– /E4
QX04	– /E3
QX05	– /E4
QX06	– /E4
QX07	– /F4
QX08	– /F4
QX09	– /F4
QX10	– /F3
QX11	– /F3
QX12	– /F3
QX13	– /F4
QX14	– /E4
QX99	– /F4
QY01	– /F2
QY02	– /E3
QY03	– /F2
QY05	– /F2
QY06	– /F3
QY07	– /F3
RJ01	– /F3
RJ02	– /F3
RJ03	– /F3
RJ04	– /E4
RJ05	– /E4
RJ06	– /E3
RJ07	– /E3
RJ08	– /E3
RJ09	– /E3
RJ10	– /E3
RJ11	– /E3
RJ12	– /E4
RJ13	– /E3
RJ14	– /E4
RJ15	– /E4
RJ16	– /E4
RJ17	– /F3
RJ18	– /E4
RJ19	– /E3
RJ20	– /E4
RJ21	– /E4
RJ22	– /F4
RJ23	– /F4
RJ24	– /F4
RJ25	– /E4
RJ26	– /F3
RJ27	– /F3
RJ28	– /E3
RJ29	– /E3
RJ30	– /D3
RJ31	– /E4
RJ32	– /F4
RJ51	– /F2
RJ52	– /F1
RJ53	– /F2
RJ54	– /F1
RJ55	– /E3
RJ56	– /E2
RJ57	– /E2
RJ58	– /E2
RJ59	– /E2
RJ60	– /E2
RJ61	– /E2
RJ62	– /E2
RJ63	– /F2
RX01	– /D3
RX02	– /D3
RX03	– /E4
RX04	– /D3
RX05	– /E3
RX06	– /E4
RX07	– /E3
RX08	– /E3
RX09	– /E3
RX10	– /E4
RX11	– /E3
RX12	– /E3
RX13	– /E4
RX14	– /E4
RX15	– /E3
RX16	– /E3
RX17	– /E4
RX18	– /E4
RX19	– /E3
RX20	– /E3
RX21	– /E4
RX22	– /E4
RX23	– /E4
RX24	– /E4
RX25	– /E4
RX26	– /E4
RX27	– /E4
RX28	– /F4
RX29	– /F4
RX30	– /F4
RX31	– /F4
RX32	– /F4
RX33	– /F4
RX34	– /F4
RX35	– /F4
RX36	– /F4
RX37	– /F4
RX38	– /F4
RX39	– /F4
RX40	– /F4
RX41	– /F4
RX42	– /F3
RX43	– /F3
RX44	– /F3
RX45	– /F3
RX46	– /F3
RX47	– /E3
RX48	– /F3
RX49	– /F4
RX50	– /E3
RX51	– /E3
RX52	– /F3
RX53	– /F3
RX54	– /F3
RX55	– /F3
RX56	– /F3
RX57	– /F3
RX58	– /F3
RX59	– /F3
RX60	– /F3
RX61	– /E3
RX62	– /F4
RX63	– /F4
RX64	– /F4
RX65	– /F4
RX66	– /F4
RX67	– /E4
RX68	– /E4
RX69	– /E4
RX80	– /F4
RX81	– /E3
RX82	– /E3
RX95	– /F4
RX96	– /F4
RX97	– /F4
RX98	– /F4
RX99	– /F4
RY01	– /E2
RY08	– /E2
RY09	– /F2
RY16	– /E2
RY17	– /F2
RY18	– /E2
RY19	– /F2
RY27	– /E3
RY28	– /F2
RY29	– /E3
RY30	– /F2
RY31	– /E2
RY32	– /F2
RY33	– /F2
RY36	– /F2
RY38	– /F2
RY39	– /F3
RY40	– /F2
RY42	– /F2
RY43	– /E2
RY44	– /D3
RY45	– /D3
RY46	– /E3
RY47	– /D3
RY48	– /E3
RY49	– /D3
RY50	– /E3
RY51	– /D3
RY52	– /E3
RY53	– /D3
RY54	– /E3
RY55	– /D3
RY56	– /E3
RY57	– /D3
RY58	– /E3
RY59	– /D3
RY60	– /E3

6-4. Output PC Board

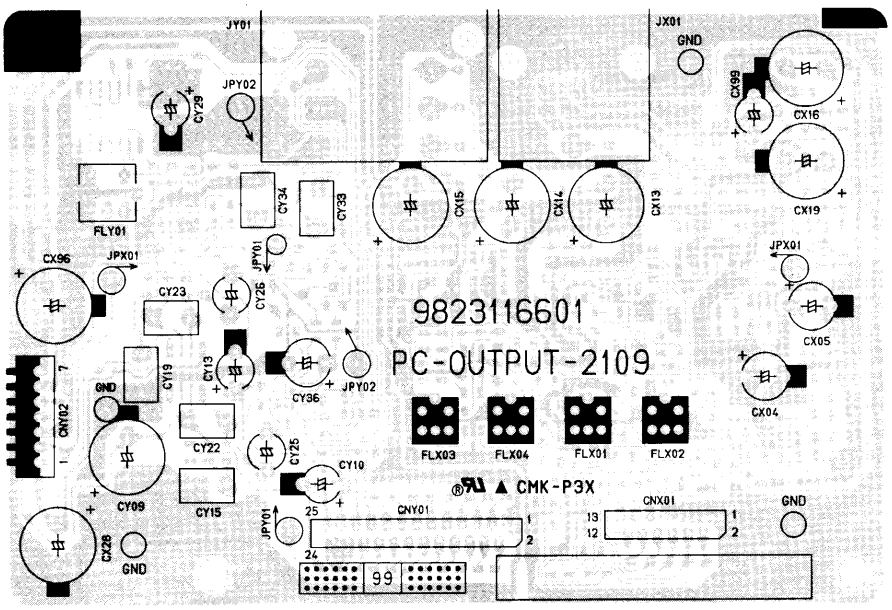


Fig. 3-6-8 EU05 Output PC Board (Top side)

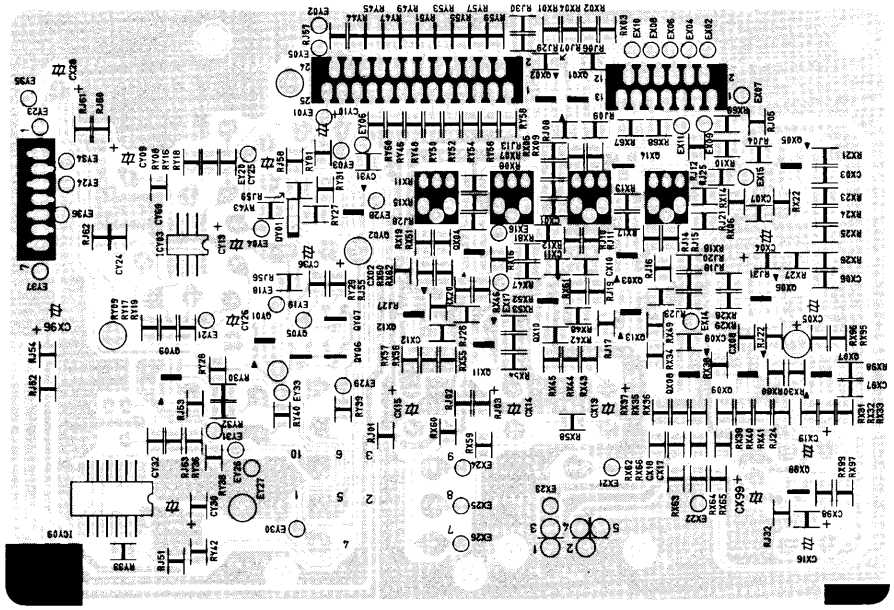


Fig. 3-6-9 EU05 Output PC Board (Bottom side)

The parts location list shows ex. A1/B1= top side/bottom side.

Part No.	Location
CNX01	C4/ –
CNY01	C3/ –
CNY02	C2/ –
CX01	– /E3
CX02	– /E3
CX03	– /E4
CX04	C4/E4
CX05	C4/F4
CX06	– /E4
CX07	– /E4
CX08	– /F4
CX09	– /F4
CX10	– /E3
CX11	– /E3
CX12	– /F3
CX13	B4/F3
CX14	B3/F3
CX15	B3/F3
CX16	B4/F4
CX17	– /F4
CX18	– /F4
CX19	B4/F4
CX28	C2/E2
CX96	B2/F2
CX97	– /F4
CX98	– /F4
CX99	B4/F4
CY09	C2/E2
CY10	C3/E3
CY13	C2/E2
CY15	C2/ –
CY19	C2/ –
CY22	C2/ –
CY23	C2/ –
CY24	– /E2
CY25	C2/E2
CY26	C2/F2
CY29	B2/ –
CY30	– /F2
CY31	– /E3
CY32	– /F2
CY33	B3/ –
CY34	B2/ –
CY36	C2/E2
CY69	– /E2
DY01	– /E2
EX02	– /E4
EX04	– /E4
EX06	– /E4
EX07	– /E4
EX08	– /E4
EX09	– /E4
EX10	– /E4
EX11	– /E4
EX14	– /F4
EX15	– /E4
EX16	– /E3
EX17	– /F3
EX21	– /F4
EX22	– /F4
EX23	– /F3
EX24	– /F3
EX25	– /F3
EX26	– /F3
EY01	– /E2
EY02	– /D3
EY03	– /E3
EY04	– /E2
EY05	– /E2
EY06	– /E3
EY18	– /E2
EY19	– /F2
EY20	– /E2
EY21	– /F2
EY23	– /E2
EY24	– /E2
EY26	– /F2
EY27	– /F2
EY28	– /E3
EY29	– /F3
EY30	– /F2
EY31	– /F2
EY33	– /F2
EY34	– /E2
EY35	– /E1
EY36	– /E2
EY37	– /E2
FLX01	C3/ –
FLX02	C4/ –
FLX03	C3/ –
FLX04	C3/ –
FLY01	B2/ –
ICY03	– /E2
ICY09	– /F2
JPX01	B2/ –
JPX01.	B4/ –
JPY01	C2/ –
JPY01.	B2/ –
JPY02	B2/ –
JPY02.	C3/ –
JX01	B4/ –
JY01	B2/ –
QX01	– /E3
QX02	– /E3
QX03	– /E4
QX04	– /E3
QX05	– /E4
QX06	– /E4
QX07	– /F4
QX08	– /F4
QX09	– /F4
QX10	– /F3
QX11	– /F3
QX12	– /F3
QX13	– /F4
QX14	– /E4
QX99	– /F4
QY01	– /F2
QY02	– /E3
QY03	– /F2
QY05	– /F2
QY06	– /F3
QY07	– /F3
RJ01	– /F3
RJ02	– /F3
RJ03	– /F3
RJ04	– /E4
RJ05	– /E4
RJ06	– /E3
RJ07	– /E3
RJ08	– /E3
RJ09	– /E3
RJ10	– /E3
RJ11	– /E3
RJ12	– /E4
RJ13	– /E3
RJ14	– /E4
RJ15	– /E4
RJ16	– /E4
RJ17	– /F3
RJ18	– /E4
RJ19	– /E3
RJ20	– /E4
RJ21	– /E4
RJ22	– /F4
RJ23	– /F4
RJ24	– /F4
RJ25	– /E4
RJ26	– /F3
RJ27	– /F3
RJ28	– /E3
RJ29	– /E3
RJ30	– /D3
RJ31	– /E4
RJ32	– /F4
RJ51	– /F2
RJ52	– /F1
RJ53	– /F2
RJ54	– /F1
RJ55	– /E3
RJ56	– /E2
RJ57	– /E2
RJ58	– /E2
RJ59	– /E2
RJ60	– /E2
RJ61	– /E2
RJ62	– /E2
RJ63	– /F2
RX01	– /D3
RX02	– /D3
RX03	– /E4
RX04	– /D3
RX05	– /E3
RX06	– /E4
RX07	– /E3
RX08	– /E3
RX09	– /E3
RX10	– /E4
RX11	– /E3
RX12	– /E3
RX13	– /E4
RX14	– /E4
RX15	– /E3
RX16	– /E3
RX17	– /E4
RX18	– /E4
RX19	– /E3
RX20	– /E3
RX21	– /E4
RX22	– /E4
RX23	– /E4
RX24	– /E4
RX25	– /E4
RX26	– /E4
RX27	– /E4
RX28	– /F4
RX29	– /F4
RX30	– /F4
RX31	– /F4
RX32	– /F4
RX33	– /F4
RX34	– /F4
RX35	– /F4
RX36	– /F4
RX37	– /F4
RX38	– /F4
RX39	– /F4
RX40	– /F4
RX41	– /F4
RX42	– /F3
RX43	– /F3
RX44	– /F3
RX45	– /F3
RX46	– /F3
RX47	– /E3
RX48	– /F3
RX49	– /F4
RX50	– /E3
RX51	– /E3
RX52	– /F3
RX53	– /F3
RX54	– /F3
RX55	– /F3
RX56	– /F3
RX57	– /F3
RX58	– /F3
RX59	– /F3
RX60	– /F3
RX61	– /E3
RX62	– /F4
RX63	– /F4
RX64	– /F4
RX65	– /F4
RX66	– /F4
RX67	– /E4
RX68	– /E4
RX69	– /E4
RX80	– /F4
RX81	– /E3
RX82	– /E3
RX95	– /F4
RX96	– /F4
RX97	– /F4
RX98	– /F4
RX99	– /F4
RY01	– /E2
RY08	– /E2
RY09	– /F2
RY16	– /E2
RY17	– /F2
RY18	– /E2
RY19	– /F2
RY27	– /E3
RY28	– /F2
RY29	– /E3
RY30	– /F2
RY31	– /E2
RY32	– /F2
RY33	– /F2
RY36	– /F2
RY38	– /F2
RY39	– /F3
RY40	– /F2
RY42	– /F2
RY43	– /E2
RY44	– /D3
RY45	– /D3
RY46	– /E3
RY47	– /D3
RY48	– /E3
RY49	– /D3
RY50	– /E3
RY51	– /D3
RY52	– /E3
RY53	– /D3
RY54	– /E3
RY55	– /D3
RY56	– /E3
RY57	– /D3
RY58	– /E3
RY59	– /D3
RY60	– /E3

Notice

This model provides two kinds of output PC boards. (Former type: 9823116600 and New type: 9823116601)

Note that the following processes are applied on the former type PC board when servicing.

(1) Top side

CY10 and CY13 mount inversely to the symbols printed on the board.

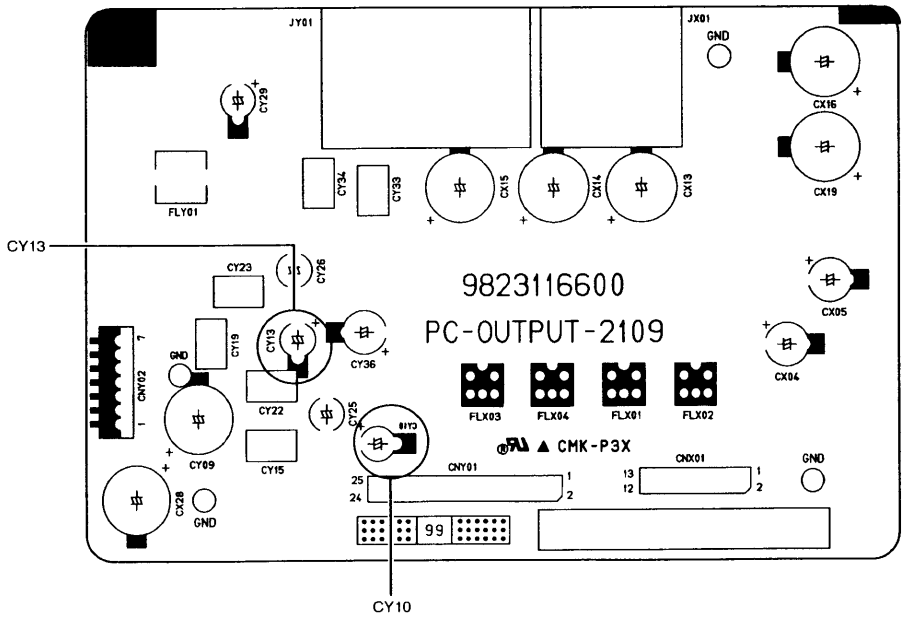


Fig. 3-6-10

(2) Bottom side

<Video section>

A: The pattern cut between pin 11 of CNX01 and RJ12. (Not required if the new type pattern is used.)

B: The pattern cut between QX14 (emitter) and GND. (Not required if the new type pattern is used.)

C: The pattern cut between "RX28 & RX29" and power supply VCC +5V. (Not required if the new type pattern is used.)

D: Transistor 2SC2712Y mounting on QX14 position.

E: Chip resistor 10k mounting on RJ12 position.

F: CX99 (electrolytic capacitor: 47m10V) mounting between RX99 (QX99 side) and GND.

Note:

- Connect the + side of CX99 on QX99 side.

G: Connection between CX28 (+ side) and RJ16 (QX99 side) with a lead wire.

H: Connection between QX99 (emitter) and RX28 (pattern-cut side) with a lead wire.

I: Connection between QX99 (collector) and RX99 (CNX01 side) with a lead wire.

J: Connection between CX04 (+ side) and CX07 (CNX01 side) with a lead wire.

K: RX29 changes from non connection to 10 kohm.

L: RX26 changes from 1.8 kohm to 3.3 kohm.

M: RX33 changes from 330 ohm to non connection.

<Audio section>

N: RJ62 (chip jumper) is deleted.

O: Connection between pin 5 of ICY03 and CY19 (GND side) with a lead wire.

P: RY08 and RY09 change from 5.6 kohm to 5.1 kohm.

Q: The pattern cut.

R: Connection between RY49 (pin 12 side of CNY01) and QY05 (base) with a lead wire.

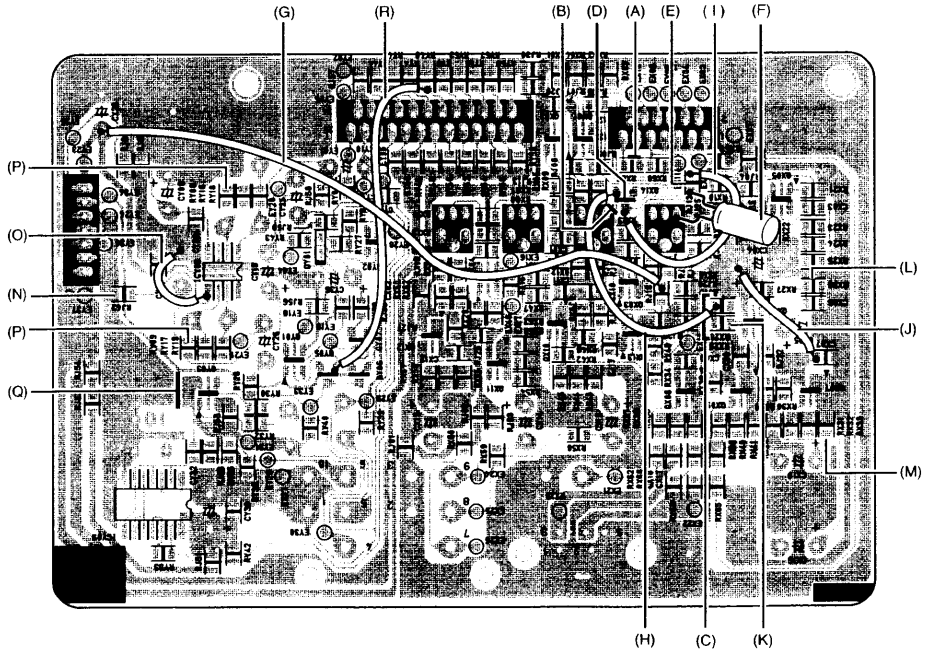


Fig. 3-6-11

Notice

This model provides two kinds of output PC boards. (Former type: 9823116600 and New type: 9823116601)

Note that the following processes are applied on the former type PC board when servicing.

(1) Top side

CY10 and CY13 mount inversely to the symbols printed on the board.

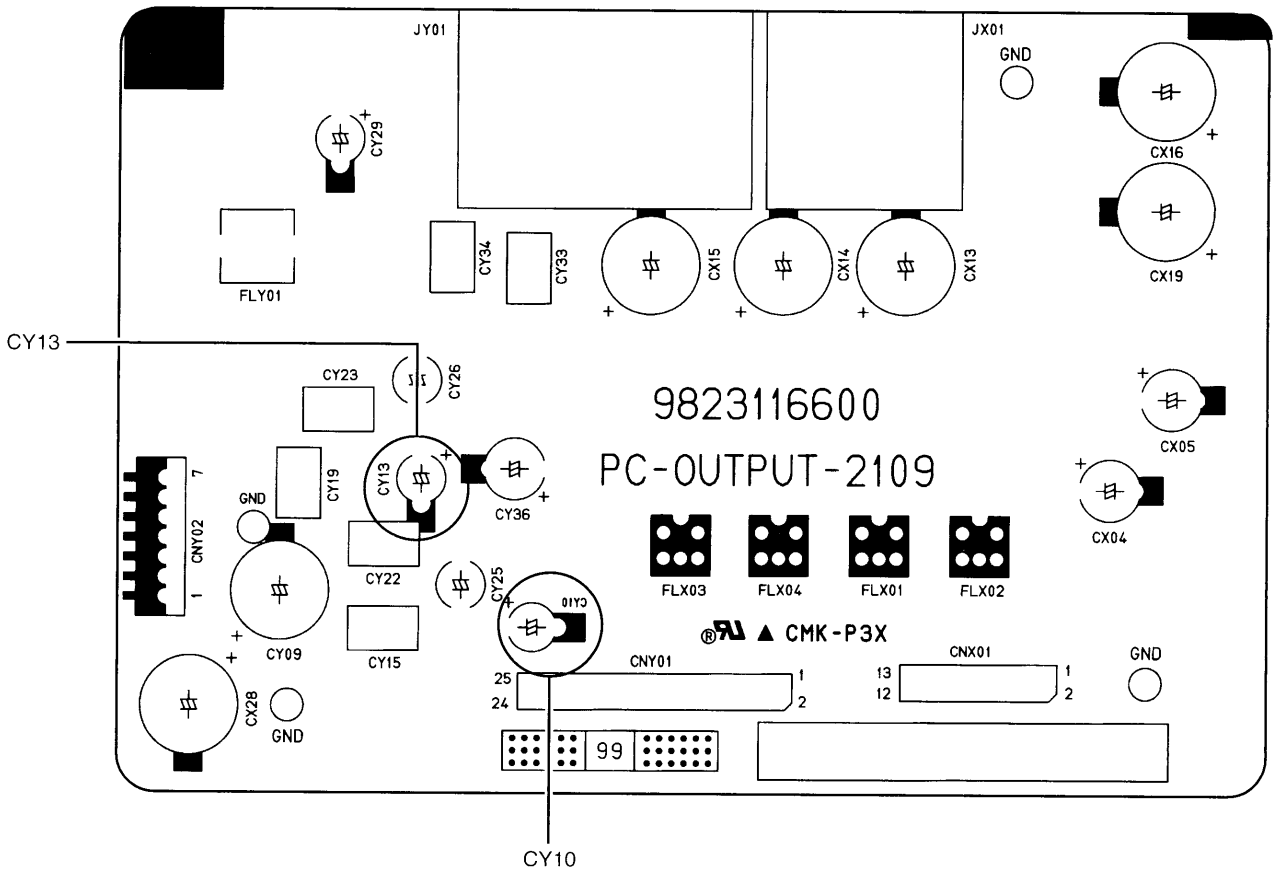


Fig. 3-6-10

(2) Bottom side

<Video section>

A: The pattern cut between pin 11 of CNX01 and RJ12. (Not required if the new type pattern is used.)

B: The pattern cut between QX14 (emitter) and GND. (Not required if the new type pattern is used.)

C: The pattern cut between "RX28 & RX29" and power supply VCC +5V. (Not required if the new type pattern is used.)

D: Transistor 2SC2712Y mounting on QX14 position.

E: Chip resistor 10k mounting on RJ12 position.

F: CX99 (electrolytic capacitor: 47m10V) mounting between RX99 (QX99 side) and GND.

Note:

- Connect the + side of CX99 on QX99 side.

G: Connection between CX28 (+ side) and RJ16 (QX99 side) with a lead wire.

H: Connection between QX99 (emitter) and RX28 (pattern-cut side) with a lead wire.

I: Connection between QX99 (collector) and RX99 (CNX01 side) with a lead wire.

J: Connection between CX04 (+ side) and CX07 (CNX01 side) with a lead wire.

K: RX29 changes from non connection to 10 kohm.

L: RX26 changes from 1.8 kohm to 3.3 kohm.

M: RX33 changes from 330 ohm to non connection.

<Audio section>

N: RJ62 (chip jumper) is deleted.

O: Connection between pin 5 of ICY03 and CY19 (GND side) with a lead wire.

P: RY08 and RY09 change from 5.6 kohm to 5.1 kohm.

Q: The pattern cut.

R: Connection between RY49 (pin 12 side of CNY01) and QY05 (base) with a lead wire.

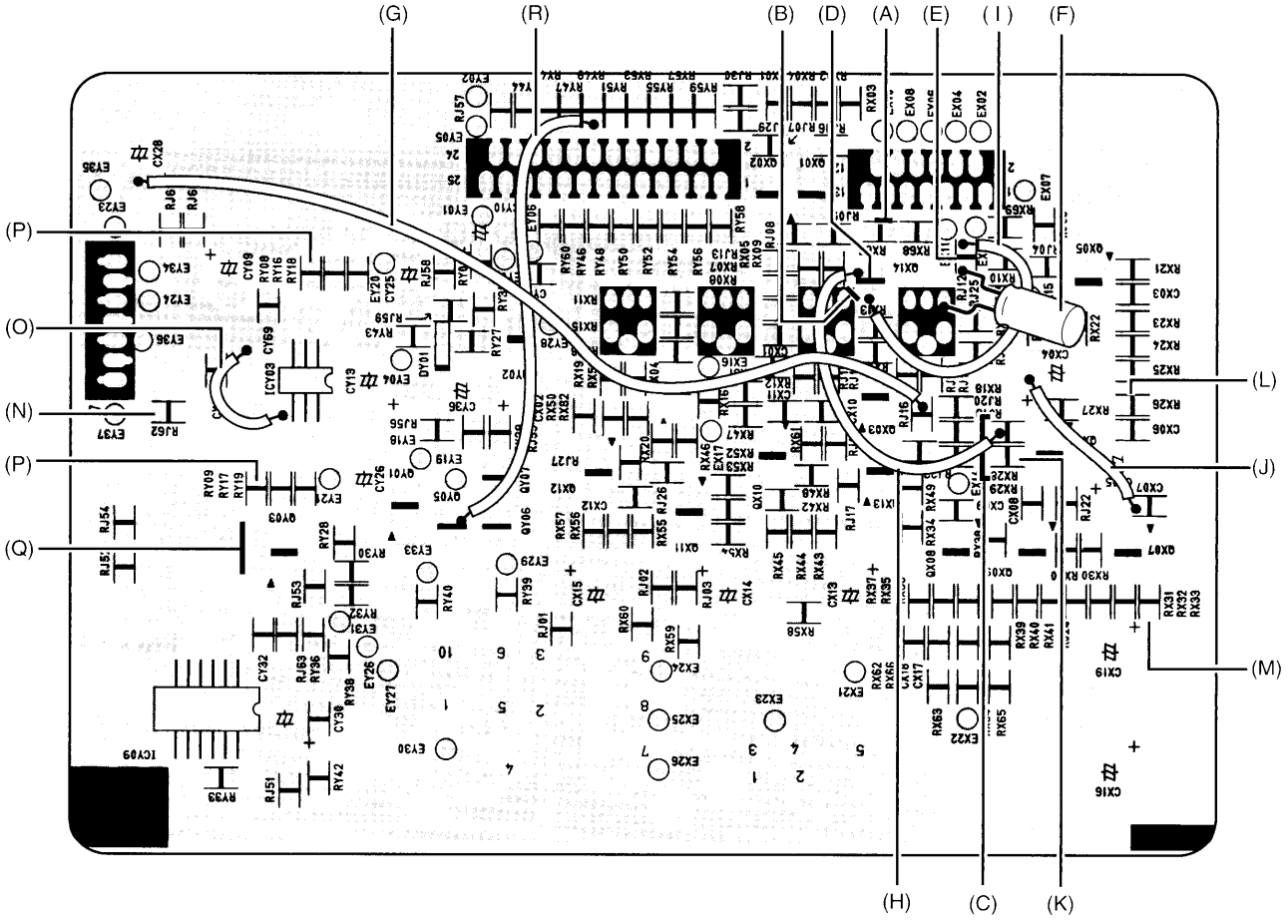


Fig. 3-6-11

6-5. Front Display PC Board

The parts location list shows ex. A1/B1= top side/bottom side.

Part No.	Location
A101	C5/–
C101	B6/–
C102	–/E7
C103	–/E2
C104	C1/–
CN101	C8/–
CN102	C1/–
D101	–/E8
D102	–/E8
FG101	C9/–
FG102	C1/–
IC101	–/E6
L101	–/E2
MT101	C2/–
Q101	–/E6
R101	–/D8
R102	–/D8
R103	–/E8
R105	–/E8
R106	–/E8
R107	–/E8
R108	–/E8
R109	–/E8
R110	–/E8
R111	–/E8
R112	–/E2
R113	–/E2
R114	–/E2
R115	–/E8
R119	–/E7
R120	–/E7
R121	–/E7
R122	–/E7
R123	–/E7
R124	–/E7
R125	–/E7
R126	–/E6
R128	–/E5
R129	–/E5
R130	–/E5
R131	–/E7
R135	–/E8
S101	B8/–
S102	C6/–
S103	B7/–
S104	B8/–
S105	C7/–
S106	C7/–
SP101	C8/–
X101	B7/–

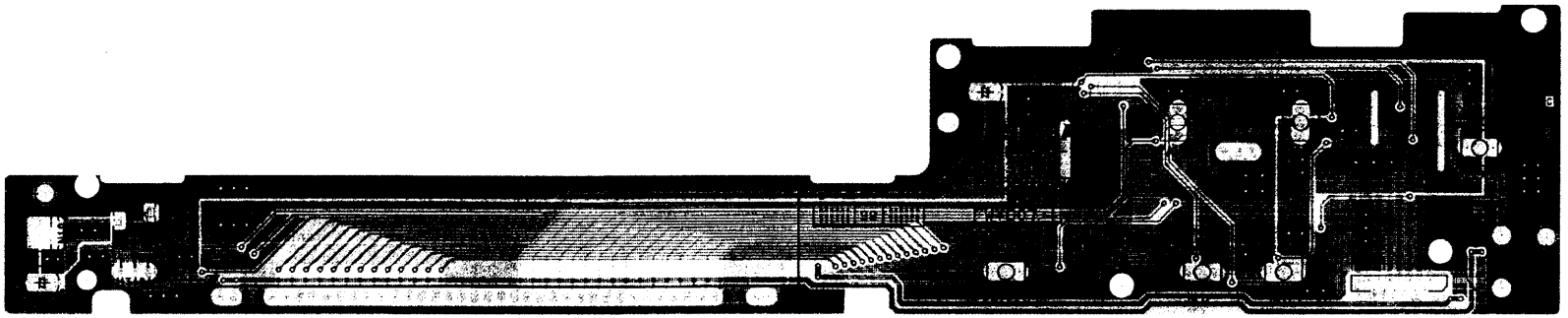


Fig. 3-6-12 EU03 Front Display PC Board (Top Side)

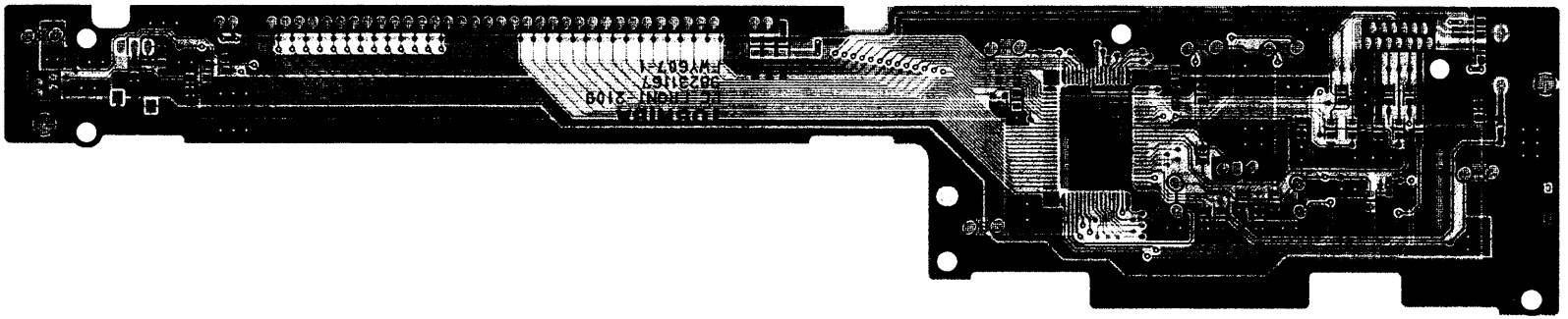


Fig. 3-6-13 EU03 Front Display PC Board (Bottom Side)

6-5. Front Display PC Board

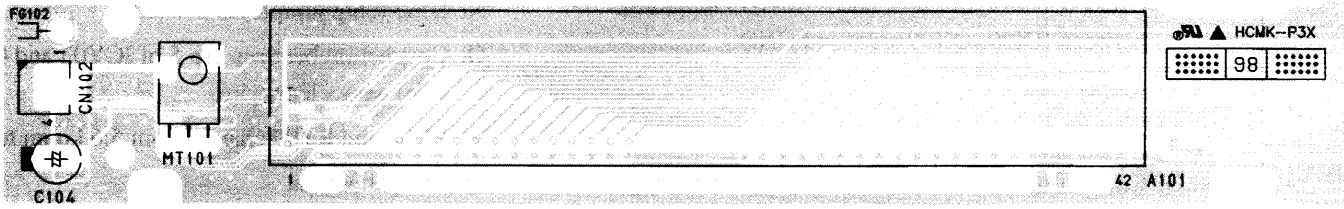


Fig. 3-6-12 EU03 Front Display PC Board (Top

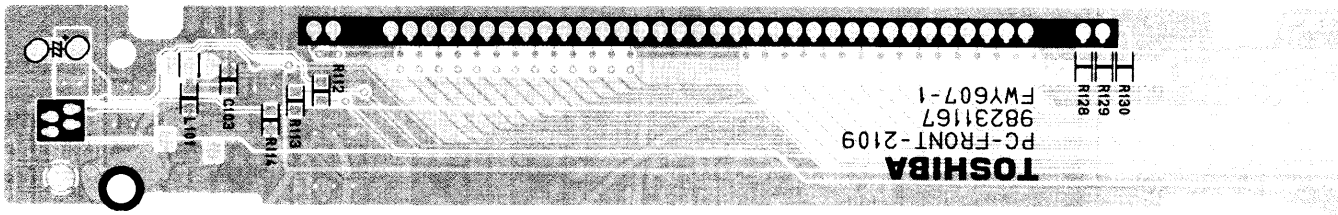
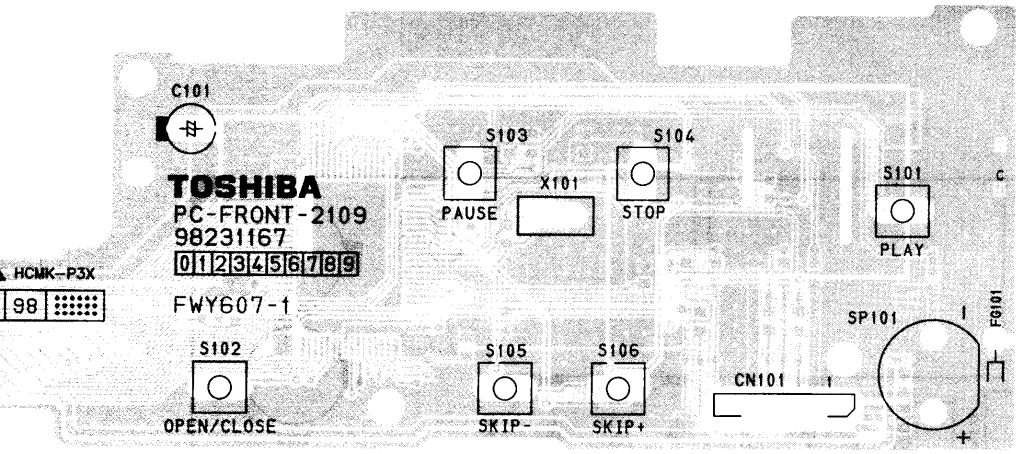
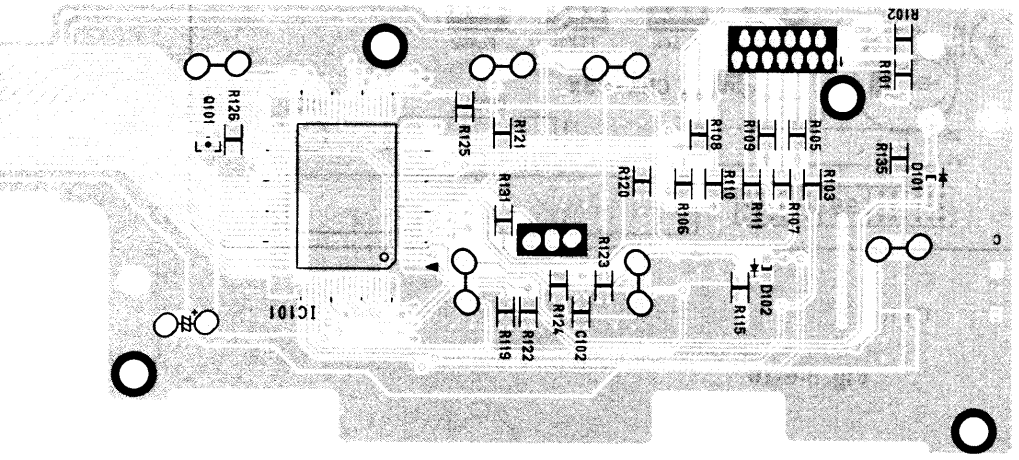


Fig. 3-6-13 EU03 Front Display PC Board (Bottom

The parts location list shows ex. A1/B1= top side/bottom side.



C Board (Top Side)



ard (Bottom Side)

Part No.	Location
A101	C5/–
C101	B6/–
C102	–/E7
C103	–/E2
C104	C1/–
CN101	C8/–
CN102	C1/–
D101	–/E8
D102	–/E8
FG101	C9/–
FG102	C1/–
IC101	–/E6
L101	–/E2
MT101	C2/–
Q101	–/E6
R101	–/D8
R102	–/D8
R103	–/E8
R105	–/E8
R106	–/E8
R107	–/E8
R108	–/E8
R109	–/E8
R110	–/E8
R111	–/E8
R112	–/E2
R113	–/E2
R114	–/E2
R115	–/E8
R119	–/E7
R120	–/E7
R121	–/E7
R122	–/E7
R123	–/E7
R124	–/E7
R125	–/E7
R126	–/E6
R128	–/E5
R129	–/E5
R130	–/E5
R131	–/E7
R135	–/E8
S101	B8/–
S102	C6/–
S103	B7/–
S104	B8/–
S105	C7/–
S106	C7/–
SP101	C8/–
X101	B7/–

SECTION 4
PARTS LIST

SAFETY PRECAUTION

The parts identified by ⚠ mark are critical for safety. Replace only with part number specified.

The mounting position of replacement is to be identical with originals.

The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

Parts marked # are of chip type and mounted on original PC boards.

However, when they are placed for servicing works, use discrete parts listed on the parts list.

ABBREVIATIONS

1. Integrated Circuit (IC)

2. Capacitor (Cap)

- **Capacitance Tolerance (for Nominal Capacitance more than 10pF)**

Table 4-2-1

Symbol	B	C	D	F	G	J	K	M	N
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20	± 30

Symbol	P	Q	T	U	V	W	X	Y	Z
Tolerance %	+ 100 0	+ 30 – 10	+ 50 – 10	+ 75 – 10	+ 20 – 10	+ 100 – 10	+ 40 – 20	+ 150 – 10	+ 80 – 20

Ex. 10μF J = 10μF ± 5%

- **Capacitance Tolerance (for Nominal Capacitance 10pF or less)**

Table 4-2-2

Symbol	B	C	D	F	G
Tolerance pF	± 0.1	± 0.25	± 0.5	± 1	± 2

Ex. 10pF G = 10pF ± 2pF

3. Resistor (Res)

- **Resistance tolerance**

Table 4-3-1

Symbol	B	C	D	F	G	J	K	M
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20

Ex. 470ΩJ = 470Ω± 5%

4. EXPLODED VIEWS

4-1. Packing Assembly

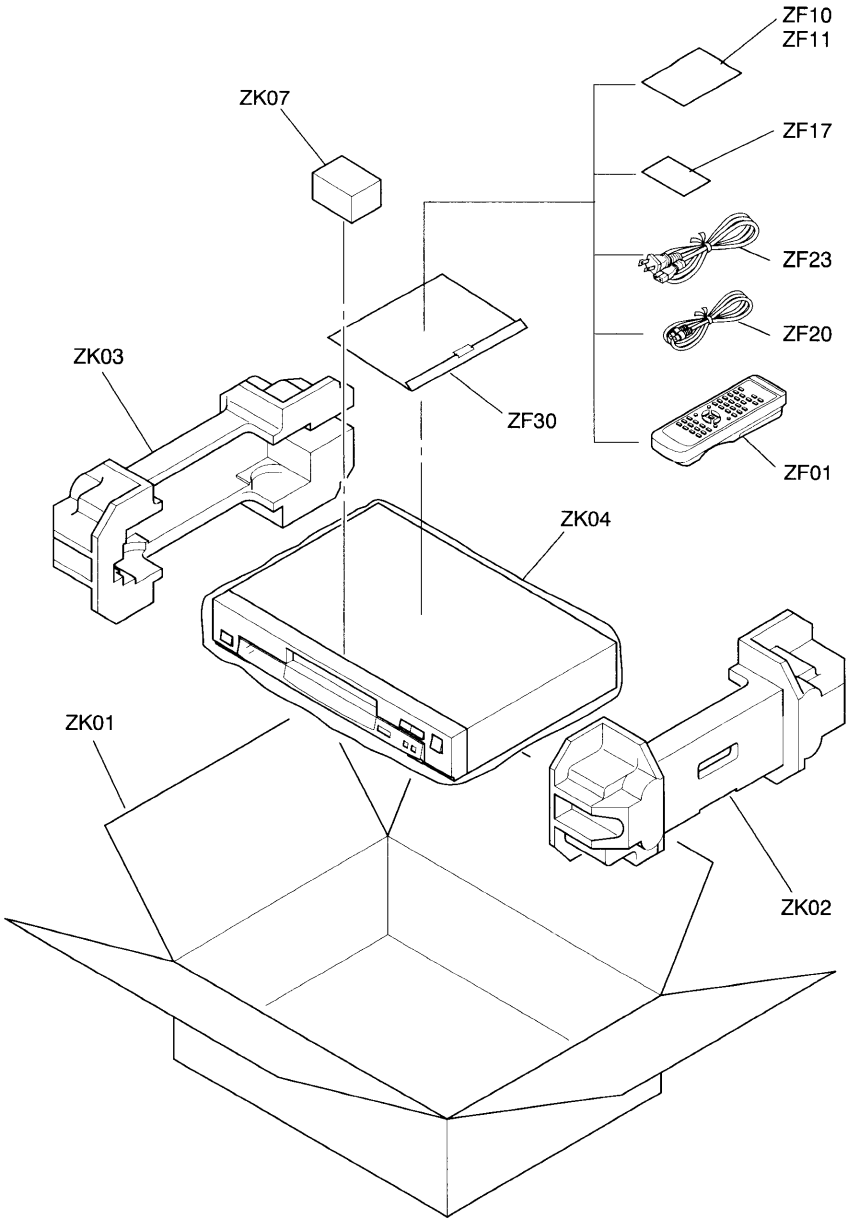


Fig. 4-4-1

4-2. Chassis Assembly

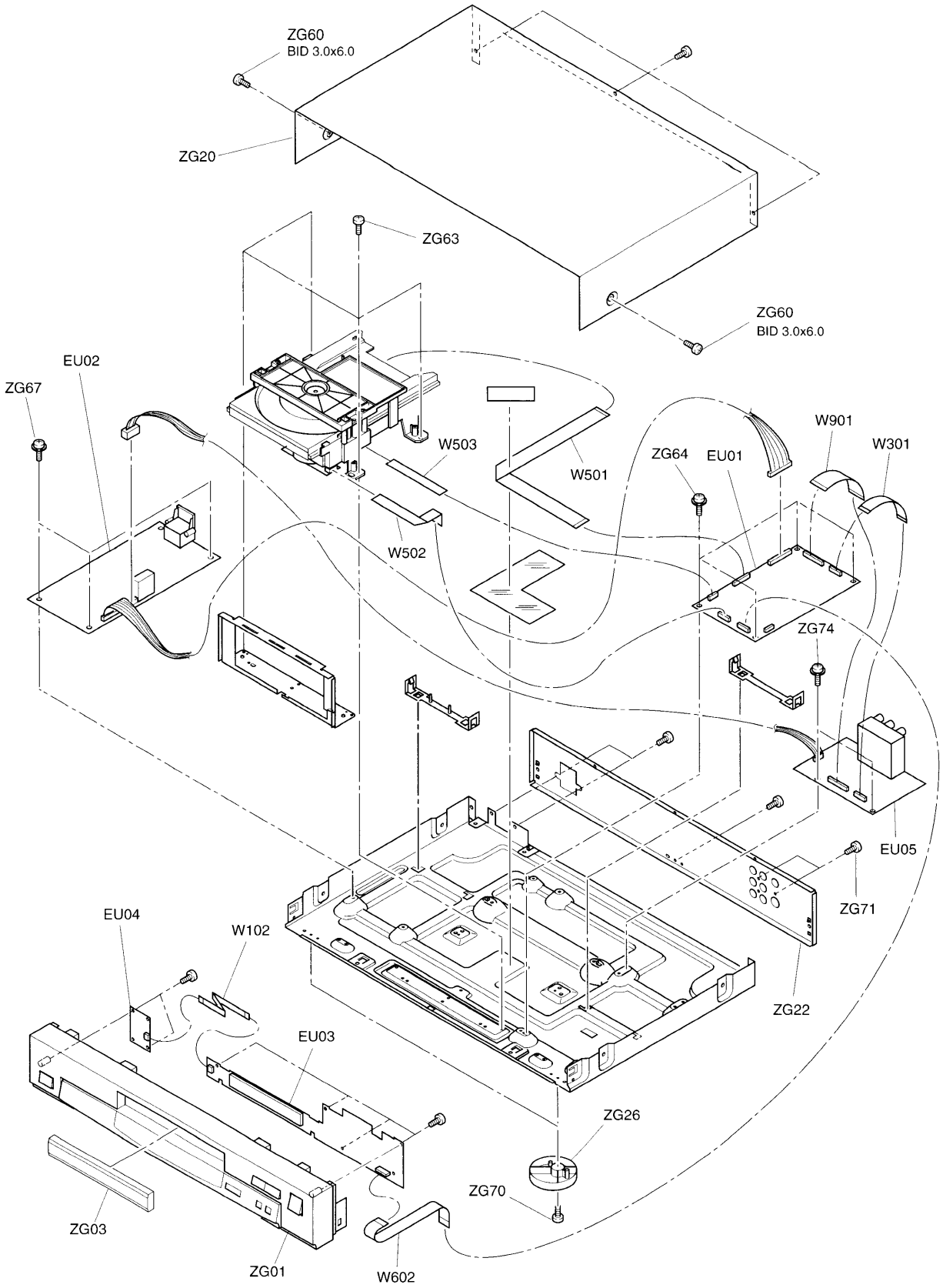


Fig. 4-4-2

4-3. Mechanism Assembly

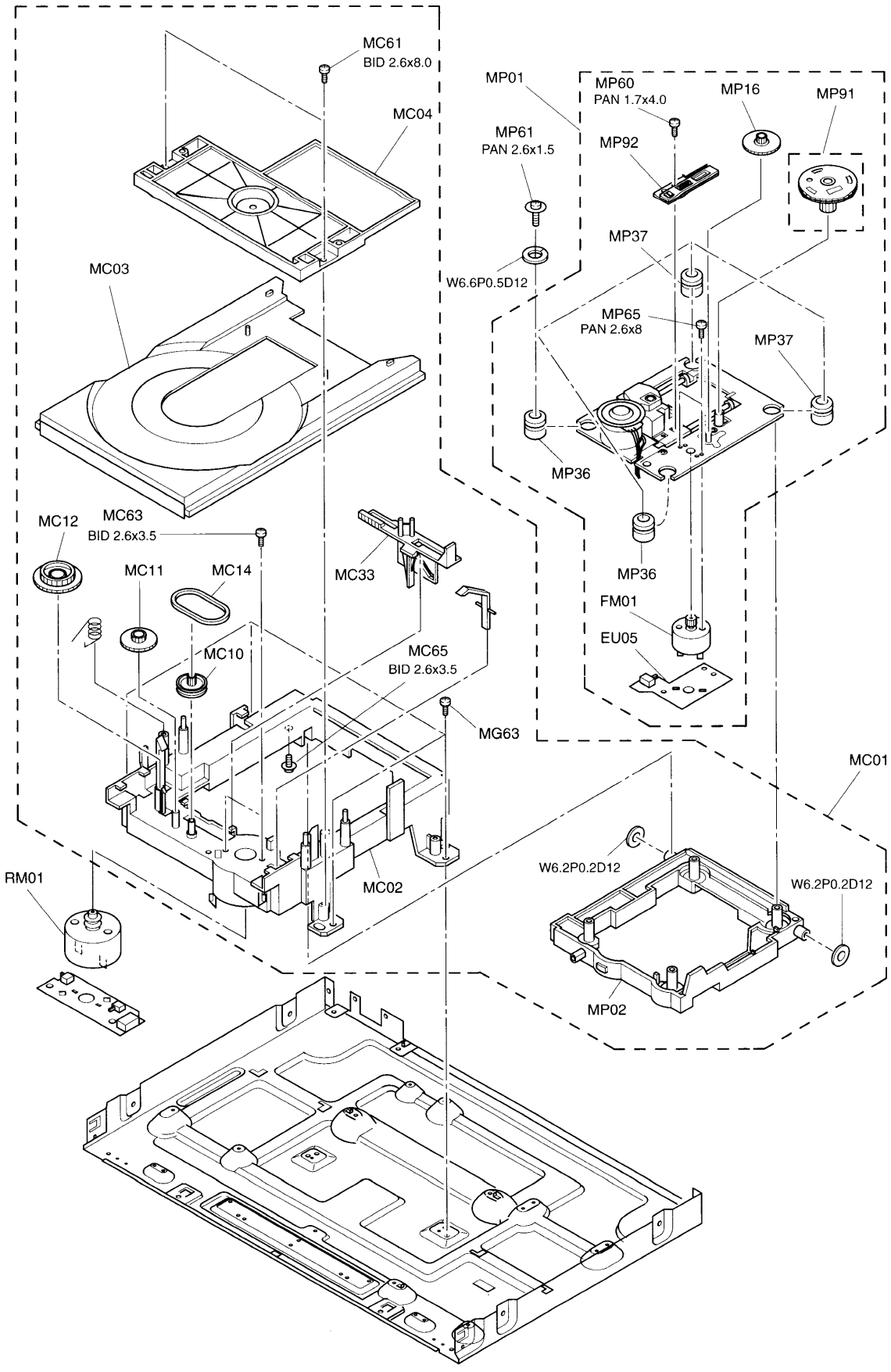


Fig. 4-4-3

5. PARTS LIST

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
		- MECHANICAL PARTS -	
FM01	79070421	Motor Assy, Feed	
MC01	79070416	Chassis Assy, Mechanism	
MC14	79070428	Belt, Loading	
MP01	79070415	Mechanism Assy, pickup	
MP16	79070422	Gear, A	
MP36	79070417	Rubber, Dumper	Front
MP37	79070418	Rubber, Dumper	Rear
MP61	79079005	Screw	TZPAN2.6x15
MP65	79079006	Screw	TZPAN2.6x8
MP91	79070419	Gear Assy, Kit B	
MP92	79070420	Gear Assy, Rack	
RM01	79070427	Motor Assy, Loading	
W102	79080145	Cable, Flexible	FFC, 4P, L120
W301	79080194	Cable, Flexible	FFC, 13P, L70
W501	79080191	Cable, Flexible	FFC, 18P, L297
W502	79080193	Cable, Flexible	FFC, 8P, L85
W503	79080192	Cable, Flexible	FFC, 6P, L110
W602	79080190	Cable, Flexible	FFC, 13P, L150
W901	79080195	Cable, Flexible	FFC, 25P, L70
ZF01	79078017	Remote Control Unit	
⚠ZF10	79077029	Owners Manual	English/Spanish
⚠ZF11	79077030	Owners Manual	French
ZF17	79070272	Warranty Card	USA
ZF17	79070406	Warranty Card	Canada
ZF20	79070037	Cable, AV	
⚠ZF23	79088007	Power Cord	
ZF30	79070042	Bag, Polyethylene	
ZG01	79071058	Front Panel	
ZG03	79071059	Panel Tray	
ZG20	79073035	Cover, Top	
ZG26	79073036	Foot Assy, Front	
ZG60	79079008	Screw	STITE3.0x6
ZG63	79079010	Screw	ZPAN3.0x8
ZG64	79079009	Screw	ZPAN3.0x6
ZG67	79079009	Screw	ZPAN3.0x6
ZG70	79079008	Screw	STITE3.0x6
ZG71	79079007	Screw	PTITE3.0x6
ZG74	79079009	Screw	ZPAN3.0x6
ZK01	79075031	Case	
ZK02	79075032	Packing, R	
ZK03	79075033	Packing, L	
ZK04	79070033	Bag, Polyethylene	
ZK07	79075035	Packing, Top	
ZZ01	79070274	Test Disc	DVDZ-9044
	79080074	Kit, Data Update	

LOCATION NUMBER	PART NUMBER	DESCRIPTION

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
		- ELECTRICAL PARTS -		
■⚠EU02	79085017	PC Board Assy	Power	
		- INTEGRATED CIRCUITS -		
Q803	79040147	IC	STR-G6651LF1105	
Q821	79040146	IC	TA76431S	
Q828	79040105	IC	BA10324A	
		- TRANSISTORS -		
⚠Q802	79050041	Photo Coupler	TLP621(GR)	
Q822	79050007	Transistor	2SC3852	
Q823	79050007	Transistor	2SC3852	
Q824	79050007	Transistor	2SC3852	
Q825	79050005	Transistor	2SC2236-Y	
Q826	79050004	Transistor	2SC2458-Y	
Q827	79050008	Transistor	RN1201	
Q829	79050005	Transistor	2SC2236-Y	
Q830	79050040	Transistor	2SA1048-Y	
		- DIODES -		
D802	79060016	Diode	ERA15-06	
D803	79060016	Diode	ERA15-06	
D804	79060016	Diode	ERA15-06	
D805	79060016	Diode	ERA15-06	
D806	79060009	Diode	RU-1P	
D807	79060013	Diode	AG01	
D810	79060013	Diode	AG01	
D811	79060013	Diode	AG01	
D812	79060015	Diode	1SS133	
D821	79060008	Diode	RU2YX	
D822	79060017	Diode	RU4Z	
D823	79060010	Diode	RK46	
D824	79060013	Diode	AG01	
D825	79060013	Diode	AG01	
D826	79060012	Diode	ERA15-02	
D827	79060007	Diode, Zener	UZ3.0BSB	
D828	79060034	Diode, Zener	MTZJT-77-10B	
D829	79060005	Diode, Zener	UZ11BSB	
D830	79060013	Diode	AG01	
D831	79060012	Diode	ERA15-02	
D832	79060012	Diode	ERA15-02	
D833	79060012	Diode	ERA15-02	
D834	79060029	Diode	MTZJT-77-6.8B	
		- COILS -		
⚠L801	79070051	Coil, Choke	ZBF253D-02	
		- CAPACITORS -		
C801	79020105	Cap, Ceramic	0.01μF	M 250V
⚠C802	79020011	Cap, Ceramic	1000pF	Z 250V
⚠C803	79020011	Cap, Ceramic	1000pF	Z 250V
C804	79020105	Cap, Ceramic	0.01μF	M 250V
C805	79020106	Cap, Electrolytic	100μF	M 200V
⚠C806	79020016	Cap, Plastic	0.033μF	J 630V
C808	79020108	Cap, Ceramic	150pF	K 1kV
C809	79020067	Cap, Electrolytic	27μF	M 35V
C810	79020078	Cap, Ceramic	470pF	K 50V
⚠C811	79020029	Cap, Ceramic	220pF	Z 250V
C812	79020107	Cap, Ceramic	220pF	K 2kV
C813	79020107	Cap, Ceramic	220pF	K 2kV
C814	79020069	Cap, Ceramic	0.1μF	J 50V
C821	79020020	Cap, Electrolytic	820μF	M 16V
C822	79020019	Cap, Electrolytic	1200μF	M 10V
C823	79020019	Cap, Electrolytic	1200μF	M 10V
C824	79020002	Cap, Electrolytic	22μF	M 100V
C825	79020077	Cap, Electrolytic	220μF	M 25V
C829	79020077	Cap, Electrolytic	220μF	M 25V
C830	79020001	Cap, Electrolytic	22μF	M 16V
C831	79020007	Cap, Electrolytic	22μF	M 50V
C833	79020021	Cap, Plastic	0.22μF	J 50V
C834	79020020	Cap, Electrolytic	820μF	M 16V
C837	79020001	Cap, Electrolytic	22μF	M 16V
		- RESISTORS -		
⚠R801	79030022	Res, Composition	3.3MΩ	J 1/2W
R803	79030045	Res, Oxide Metal	56kΩ	J 2W
⚠R804	79030025	Res, Oxide Metal	82kΩ	J 2W
R807	79030032	Res, Carbon	680Ω	J 1/6W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
⚠R808	79030011	Res, Oxide Metal	0.47Ω	J 1W
R809	79030033	Res, Carbon	3.3kΩ	J 1/6W
R811	79030034	Res, Carbon	2.4kΩ	J 1/6W
R813	79030006	Res, Carbon	100Ω	J 1/6W
R814	79030006	Res, Carbon	100Ω	J 1/6W
R815	79030006	Res, Carbon	100Ω	J 1/6W
R821	79030005	Res, Carbon	150Ω	J 1/6W
R822	79030035	Res, Carbon	2.7kΩ	J 1/6W
R823	79030004	Res, Carbon	1kΩ	J 1/6W
R824	79030002	Res, Carbon	10kΩ	J 1/6W
R825	79030039	Res, Carbon	4.7kΩ	J 1/6W
R826	79030053	Res, Oxide Metal	560Ω	J 1W
R830	79030044	Res, Carbon	2.7kΩ	G 1/4W
R831	79030041	Res, Carbon	2kΩ	G 1/4W
R832	79030056	Res, Carbon	6.2kΩ	G 1/4W
R833	79030041	Res, Carbon	2kΩ	G 1/4W
R834	79030041	Res, Carbon	2kΩ	G 1/4W
R835	79030041	Res, Carbon	2kΩ	G 1/4W
R836	79030041	Res, Carbon	2kΩ	G 1/4W
R837	79030041	Res, Carbon	2kΩ	G 1/4W
R838	79030042	Res, Carbon	680Ω	G 1/4W
R839	79030041	Res, Carbon	2kΩ	G 1/4W
R840	79030029	Res, Carbon	100kΩ	G 1/4W
R843	79030004	Res, Carbon	1kΩ	J 1/6W
R844	79030004	Res, Carbon	1kΩ	J 1/6W
R846	79030030	Positive Thermister	PTH8L510-T	
		- MISCELLANEOUS -		
⚠F801	79087002	Fuse	1.6A, 250V	
⚠F822	79070061	Protector	125V, 3.0A	
⚠F823	79070055	Protector	125V, 2.0A	
P802	79089023	Jack	AC Inlet	
⚠RF821	79030054	Res, Fusible	1Ω	J 1/4W
S810	79089018	Relay	DS9D2-0S(M)	
⚠T801	79080055	Line Filter	183Y0R5	
⚠T802	79010015	Power Transformer	SRW3020ED5-207	
■EU04	79081024	PC Board Assy	Power Switch	
		- MISCELLANEOUS -		
S141	79089020	Switch	Push	
■EU03	79081023	PC Board Assy	Front	
		- INTEGRATED CIRCUITS -		
IC101	79040156	IC	TMP87CH70BF-6821	
		- MISCELLANEOUS -		
A101	79089019	Display, FL	13-ST-39GNK	
MT101	79080140	Module, RMT	GP1U261X	
S101	79089020	Switch	Push	
S102	79089020	Switch	Push	
S103	79089020	Switch	Push	
S104	79089020	Switch	Push	
S105	79089020	Switch	Push	
S106	79089020	Switch	Push	
X101	79070006	Oscillator, Ceramic	8MHz	
■EU01	79083019	PC Board Assy	Main	
		- INTEGRATED CIRCUITS -		
IC201	79040154	IC	TC203G08AF-0103(Z)	
IC202	79040145	IC	NN514800AJ-60T	
IC301	79040122	IC	MD36710X	
IC302	79040063	IC	HY57V16160ATC-10	
IC305	79040063	IC	HY57V16160ATC-10	
IC306	79040096	IC	ADV7170KS	
IC307	79040130	IC	NJU6321PE-TE1	
IC308	79040011	IC	TC7W04F	
IC311	79040013	IC	TC7W74F	
IC312	79040119	IC	TC7SH86F	
IC313	79040119	IC	TC7SH86F	
IC314	79040119	IC	TC7SH86F	
IC501	79040152	IC	TA1293F	
IC502	79040149	IC	TC9453F	
IC503	79040148	IC	V53C16128HK-30	
IC504	79040150	IC	KA3032	
IC506	79040006	IC	TC7S04F	
IC508	79040066	IC	UPC29L33T	
IC601	79040158	IC	TMP94CS40AF-4401	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
IC602	79040041	IC	PST591-IDT	
IC607	79040007	IC	TC7S08F	
IC613	79040070	IC	S-24C01AFJ-TB	
IC614	79040148	IC	V53C16128HK-30	
IC615	79040153	IC	MBM29F800BA55TN	
IC616	79040007	IC	TC7S08F	
IC617	79040087	IC	TC7W241FU	
IC901	79040151	IC	PCM1727E	
IC902	79040119	IC	TC7SH86F	
IC903	79040102	IC	NJM2370U05	
IC904	79040087	IC	TC7W241FU	
		- TRANSISTORS -		
Q501	79050036	Transistor, Chip	2SA1832-GR	
Q502	79050042	Transistor, Chip	2SC2883-Y	
Q503	79050014	Transistor, Chip	HN1C03F	
Q601	79050031	Transistor, Chip	DTA114EKA	
		- MISCELLANEOUS -		
X301	79089003	Oscillator	SMD49, 27MHz	
X501	79089021	Oscillator, Ceramic	22.58MHz	
X601	79089022	Oscillator, Ceramic	9.00MHz	
■EU05	79085016	PC Board Assy	Output	
		- INTEGRATED CIRCUITS -		
ICY03	79040044	IC	NJM4580E	
ICY09	79040074	IC	TC74HCU04AF	
		- TRANSISTORS -		
QX01	79050022	Transistor, Chip	HN1A01F-Y	
QX02	79050022	Transistor, Chip	HN1A01F-Y	
QX03	79050022	Transistor, Chip	HN1A01F-Y	
QX04	79050022	Transistor, Chip	HN1A01F-Y	
QX05	79050013	Transistor, Chip	HN1C01F	
QX06	79050013	Transistor, Chip	HN1C01F	
QX07	79050015	Transistor, Chip	HN1B01F	
QX08	79050015	Transistor, Chip	HN1B01F	
QX09	79050015	Transistor, Chip	HN1B01F	
QX10	79050015	Transistor, Chip	HN1B01F	
QX11	79050015	Transistor, Chip	HN1B01F	
QX12	79050015	Transistor, Chip	HN1B01F	
QX99	79050016	Transistor, Chip	2SC2712	
QY01	79050012	Transistor, Chip	RN4601	
QY02	79050014	Transistor, Chip	HN1C03F	
QY03	79050014	Transistor, Chip	HN1C03F	
QY05	79050001	Transistor, Chip	RN2402	
QY06	79050001	Transistor, Chip	RN2402	
QY07	79050001	Transistor, Chip	RN2402	
		- DIODES -		
DY01	79060019	Diode, Chip	1SS355	
		- CAPACITORS -		
CX04	79020101	Cap, Electrolytic	220μF	M 10V
CX05	79020101	Cap, Electrolytic	220μF	M 10V
CX13	79020099	Cap, Electrolytic	470μF	M 6.3V
CX14	79020099	Cap, Electrolytic	470μF	M 6.3V
CX15	79020099	Cap, Electrolytic	470μF	M 6.3V
CX16	79020099	Cap, Electrolytic	470μF	M 6.3V
CX19	79020099	Cap, Electrolytic	470μF	M 6.3V
CX28	79020103	Cap, Electrolytic	470μF	M 16V
CX99	79020100	Cap, Electrolytic	47μF	M 10V
CY09	79020103	Cap, Electrolytic	470μF	M 16V
CY10	79020100	Cap, Electrolytic	47μF	M 10V
CY13	79020100	Cap, Electrolytic	47μF	M 10V
CY15	79020097	Cap, Plastic	1200pF	J 50V
CY19	79020097	Cap, Plastic	1200pF	J 50V
CY22	79020096	Cap, Plastic	150pF	J 50V
CY23	79020096	Cap, Plastic	150pF	J 50V
CY25	79020104	Cap, Electrolytic	47μF	M 10V
CY26	79020104	Cap, Electrolytic	47μF	M 10V
CY29	79020102	Cap, Electrolytic	10μF	M 16V
CY33	79020098	Cap, Plastic	4700pF	J 50V
CY34	79020098	Cap, Plastic	4700pF	J 50V
CY36	79020101	Cap, Electrolytic	220μF	M 10V
		- MISCELLANEOUS -		
FLX01	79010008	Coil	TH286LAIS15674	
FLX02	79010008	Coil	TH286LAIS15674	
FLX03	79010008	Coil	TH286LAIS15674	
FLX04	79010008	Coil	TH286LAIS15674	

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
JX01	79089017	Plate	Jack
JY01	79089016	Plate	Jack

SPECIFICATIONS

DVD Video Player/Outputs/Supplied Accessories

[DVD Video Player]

Power supply	120V AC, 60 Hz
Power consumption	18W
Mass	3.0 kg
External dimensions	430 x 81 x 305 mm (W/H/D)
Signal system	Standard NTSC
Laser	Semiconductor laser, wavelength 650 nm
Frequency range	DVD linear sound : 48 kHz sampling 4 Hz to 22 kHz 96 kHz sampling 4 Hz to 44 kHz Audio CD : 4 Hz to 20 kHz
Signal-to-noise ratio	More than 112 dB
Audio dynamic range	More than 96 dB
Harmonic distortion	Less than 0.006%
Wow and flutter	Below measurable level (less than ± 0.001% (W. PEAK))
Operating conditions	Temperature: 5 °C to 35 °C, Operation status: Horizontal

[Outputs]

Video output	1.0 V (p-p), 75 Ω, negative sync., pin jack x 1
S video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., Mini DIN 4-pin x 1 (C) 0.286 V (p-p), 75 Ω
Color different video output	(Y) 1.0 V (p-p), 75Ω, negative sync., pin jack x 1 (C_B)/(C_R) 0.7 V (p-p), 75 Ω, pin jack x 2
Audio output (BITSTREAM/PCM)	0.5 V (p-p), 75 Ω, pin jack x 1
Audio output (ANALOG)	2.0 V (rms), 220 Ω, pin jacks (L,R) x 1

[Supplied Accessories]

Audio /video cable	1
Remote control (SE-R0014)	1
Batteries (AA)	2
Power cord	1

* Designs and specifications are subject to change without notice.